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AVIATION

The Oldest American Aeronautical Magazine

OCTOBER 17, 1927 Issued Weekly PRICE 20 CENTS

Lars Larsen testing a new type of parachute over Burdette Field, Los Angeles

VOLUME XXIII

NUMBER 16

Special Features

Air Traffic in Italy During 1926
Design Reactions From the Spokane Races
The Cost of Successful National Distribution

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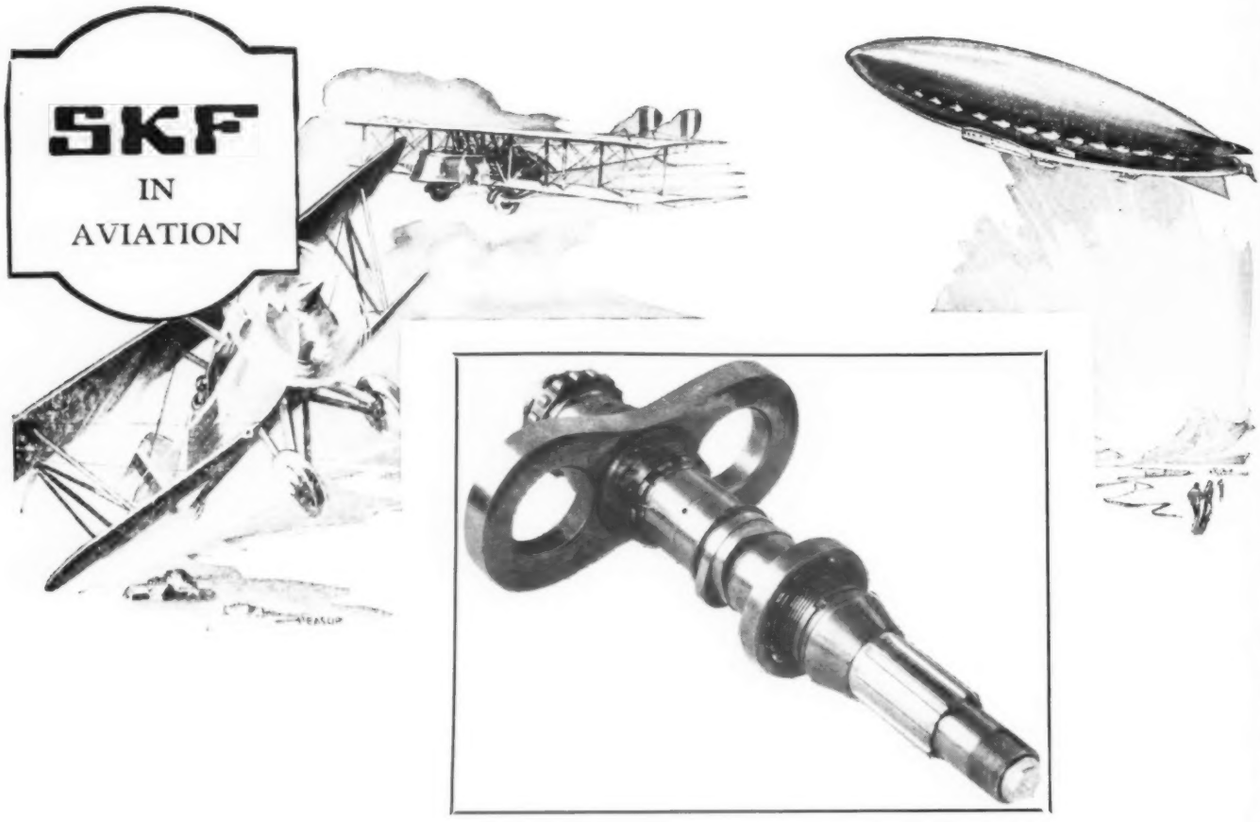

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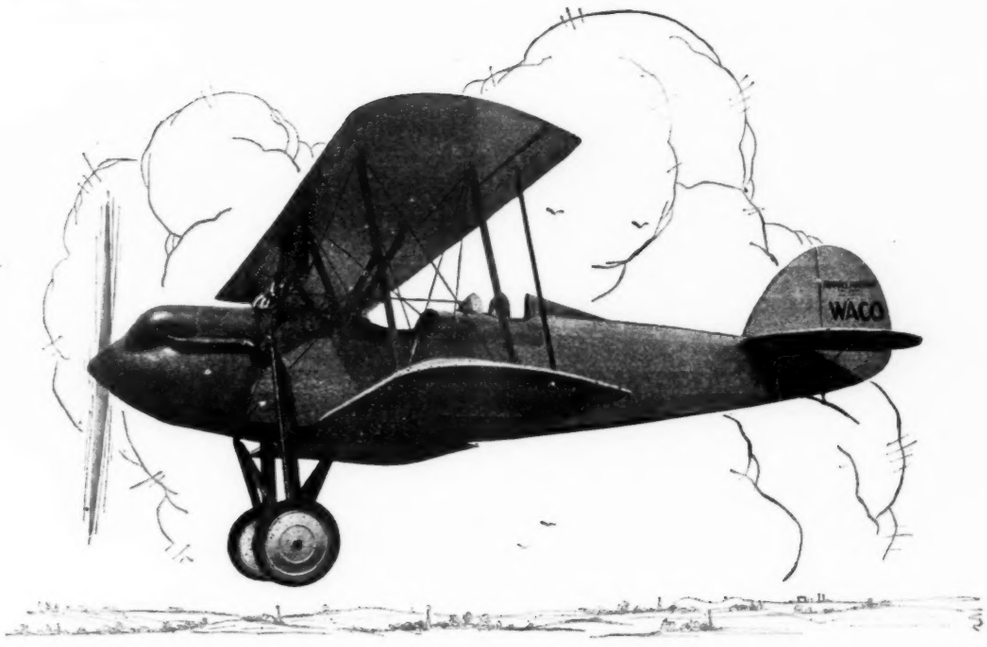

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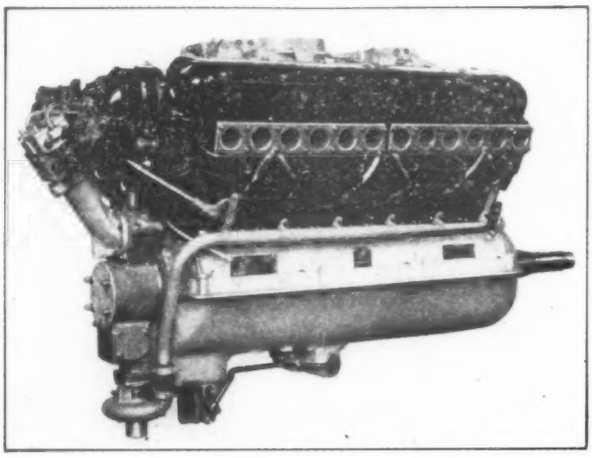

THE CURTISS V-1550 MOTOR

What the four entries did at Spokane September 24th

Winners of the Liberty Engine Builders Trophy Race

First, Lt. H. A. Johnson, USA, in Curtiss Falcon
Average Speed 170 MPH

Second, Lt. G. A. McHenry, USA, in Curtiss Falcon
Average Speed 164 MPH

Winners of Free For All Pursuit Ship Race

First, Lt. Eugene Batten, USA, in Curtiss Hawk
Average Speed 201 MPH

Second, Lt. A. J. Lyon, USA, in Curtiss Hawk
Average Speed 189 MPH

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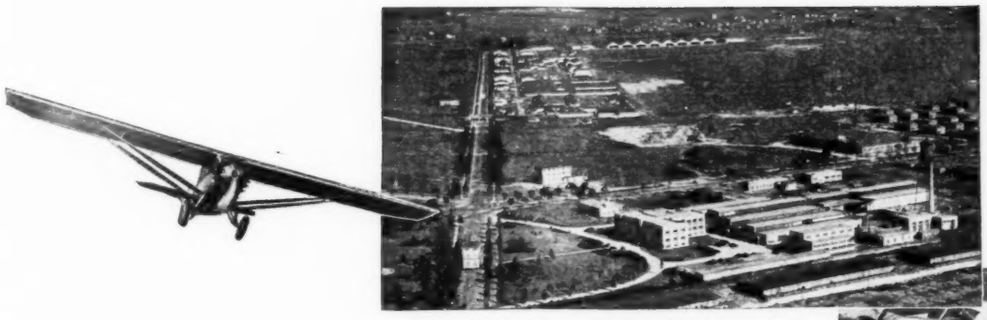

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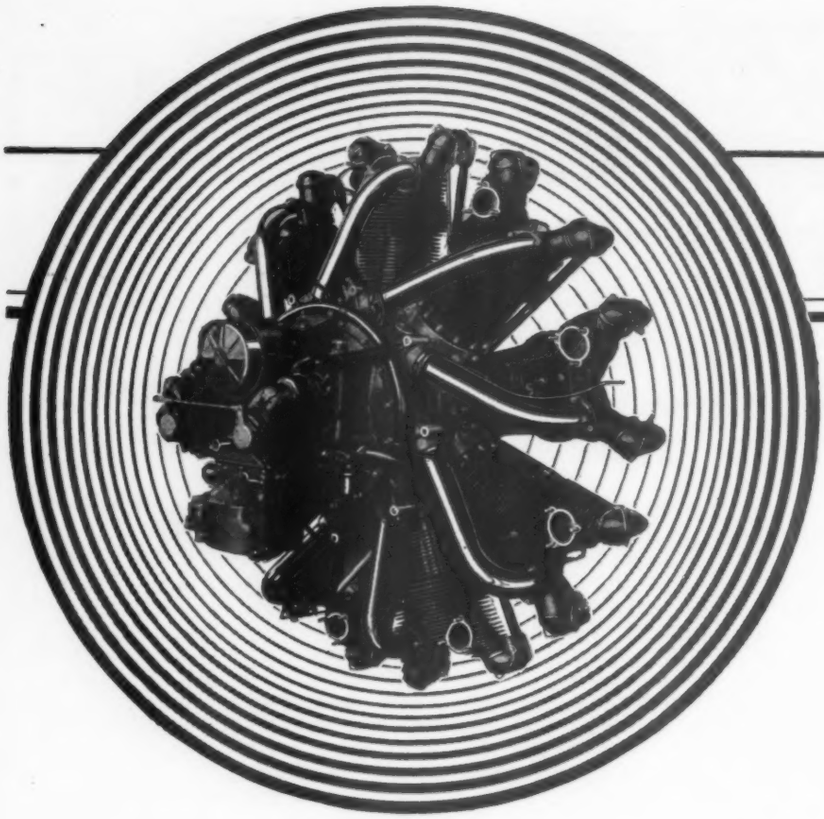
With the Editor

As the result of the increased popularity of aviation in this country and therefore the increased production and sales of airplanes a paramount problem that now confronts the aircraft manufacturers is the matter of obtaining national distribution of their products at a minimum cost.

On page 942 of this issue of AVIATION is to be found an article entitled, "The Cost of Successful National Distribution." It has been written as the result of an investigation into this question and enlarges upon seven factors to be considered in obtaining national distribution. Although such a subject cannot be covered in one writing, you will find the article very interesting, and, perhaps, some part of it can be profitably applied to your own business.



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AVIATION

The Oldest American Aeronautical Magazine

Vol. XXIII *October* 17, 1927 No. 16

Toney Yackey

IN THE death of Toney Yackey aviation has suffered a great loss. All those who met him were impressed by the dynamic energy of the man, by the strength of his views and by his ability to put things across. In the hard pioneering days when every one was having difficulties Toney Yackey not only made a living out of commercial aviation but built up a real business. He fearlessly championed those things which he considered were right and his influence was felt not only in the town in which he lived but throughout the country. Toney Yackey's wide circle of friends have felt his death deeply but his influence will remain as an inspiration for those who are destined to carry on his work.

Proprietary Rights

EVEN IN an art which is changing as rapidly as aeronautics there are comparatively few inventions which can be put into immediate practice. Progress almost invariably comes through a slow and discouraging process of gradual perfection. Some one has an idea which may be better than the ideas in use at the time but it takes years of persistent effort and expense before it finally can surplant the existing practice. In certain cases such as the Handley Page slotted wing or the Fairchild Caminez engine certain features can be more or less protected by patents. Other fundamentally sound ideas such as the use of welded steel tubes in fuselages in which Anthony Fokker played such a prominent part cannot be covered by patents but should receive some sort of recognition.

Perhaps one of the best examples of this is the composite wood and metal construction as applied to seaplane hulls and which has been under development by Loening for a period of over fifteen years. The idea is not a complicated one but it goes against traditional ship building practice and, as such, was taboo to many people. Also there were many problems to be solved in making the metal fast to the wood and in preventing corrosion where water soaked in between metal and wood. The soundness of the idea was proved only after many years of experimenting and much practical demonstration. The fact that several commercial firms are now using this form of construction for boat hulls is good proof of its value.

The development of such ideas as these can not be protected in the normal commercial sense of the word. The originator of the idea is often glad to see other firms adopt an idea which he has developed provided he receives proper credit for the development. Commercially speaking the general adoption of an idea by the trade is the best of advertising for the firm which has done the original development work. From the military viewpoint the matter is very different. If firms are to be encouraged to the development work and to bring out new ideas they must be able in some way to capitalize the development of ideas which cannot be completely covered by patents. The government can, does, and should recognize the necessity of rewarding firms which put new ideas to practical application. Progress in military planes depends to a large extent on the encouragement which is given to the development of 'proprietary rights''.

Aerial Rough Riding

NORMALLY THE sky is a smooth and pleasant place, occasionally it is bumpy enough to be really unpleasant and once in a long time the air roars around about in seething cataracts which toss a plane about in a manner which is indescribable. The latter conditions occur so rarely in normal flying that the average passenger plane is often not really designed to meet the emergency. The structure of the plane itself is usually designed with a sufficient factor of safety but in the design of the seats and so forth it is often assumed that as the plane will not be stunted that there is no need to take the precautions which are taken in pursuit planes.

The matter is not one however which should be taken too lightly. In a closed cabin plane if a chair should break loose or the passengers should be thrown to one end of the plane or the other it would almost inevitably lead to disaster. One accident at least in which many lives were lost is directly traceable to the chairs having been loosely placed in the cabin with the result that all the passengers were thrown forward during a forced landing in a storm and the plane went into a nose dive from which it did not recover. Chairs should not only be firmly attached to the cabin with factors of safety even greater than those for the rest of the plane but they should be given such a shape that the passengers can hold on comfortably, and for really rough weather a safety belt should be provided.

Open cockpit planes should all be provided with safety belts and the passenger made to use them. There is nothing more terrifying to a passenger than to be thrown even a few inches off his seat. A rail or strut which a passenger can hold to in case of bumpy air also adds considerably to his comfort.

A Dornier Wal passing a section of Geneva on the Geneva-Palermo route

Air Traffic in Italy During 1926

THE ITALIAN AIR MINISTRY has just published a statistical report concerning 1926 air traffic on the five Italian air lines: Turin-Trieste; Venice-Trieste-Zara; Geneva-Palermo; Brindisi-Athen-Constantinople; and Venice-Vienna. The Turin-Trieste line (operated by the S.I.S.A.—Società Italiana Servizi Aerei) was flown from April 1 to Oct. 15. Out of the 355 flights 9 could not be terminated and 25 were terminated with considerable delays. These delays were chiefly due to the weather conditions (23 out of 25) and in two cases to engine defects.

As regards the nine interrupted flights, machine defects were ascertained in three cases and engine troubles in six cases. The total percentages are as follows: Regular flights, 90.42 per cent; flights delayed by weather conditions, 6.48 per cent.; flights interrupted owing to machine defects 0.85 per cent.; flights interrupted or delayed owing to engine troubles, 2.25 per cent. No accidents to passengers were reported during the six months operation.

General results: No. of flights, 355; miles flown, 125,300; passengers carried, 1,382; mail in lb. 2,390; freight and luggage in lb. 26,200; occupied places on board the airplanes, 97.32 per cent.

On Oct. 16, 1926, the service on the air line Turin-Venice was suspended, and at the same date a special bidaily service began on the line Venice-Trieste-Zara and was continued up to Dec. 31. One hundred and twenty-two regular flights were carried out on the line Venice-Trieste, some of which suffered a negligible delay. On the line Trieste-Zara, 92 flights took place regularly, and two had to be interrupted owing to weather conditions. There were no accidents to passengers, and no damage whatever to the material.

General results: No. of flights, 214; mi. flown, 22,810; passengers carried, 206; mail in lb. 221; freight in lb., 3,475; occupied places on board the airplanes, 25 per cent.; regular flights on the stage Venice-Trieste, 100 per cent.; regular flights on the stage Trieste-Zara, 98 per cent.

The Geneva-Palermo line is operated by the "Società Anonima di Navigazione Aerea." It should be considered as consisting of three different lines, Geneva-Ostia (Rome), Ostia-Naples and Naples-Palermo. Each was flown in both directions by a different airplane; too times weekly during the first month; three times weekly during the second month and three times weekly from the third month on. From April 7 to Dec. 31, 1926, 110 flights were planned for the line Geneva-Ostia; and 210 flights for both the other lines.

The actual flights made are as follows: Geneva-Ostia, 88;

Ostia-Naples, 204, and Naples-Palermo, 192. Total number of flights made, 484.

Out of the total flights, only five had to be interrupted. Two owing to engine troubles, two owing to machine defects and one to weather conditions. Considered as a whole the percentages are: regular flights, 66.30 per cent.; flights interrupted owing to weather conditions, 29.15 per cent.; flights interrupted owing to machine defects, 1.55 per cent., and flights interrupted owing to motor troubles, 3 per cent. There were no accidents to persons during the nine months.

Figures referring to the general operation of the Geneva-Palermo line are as follows:

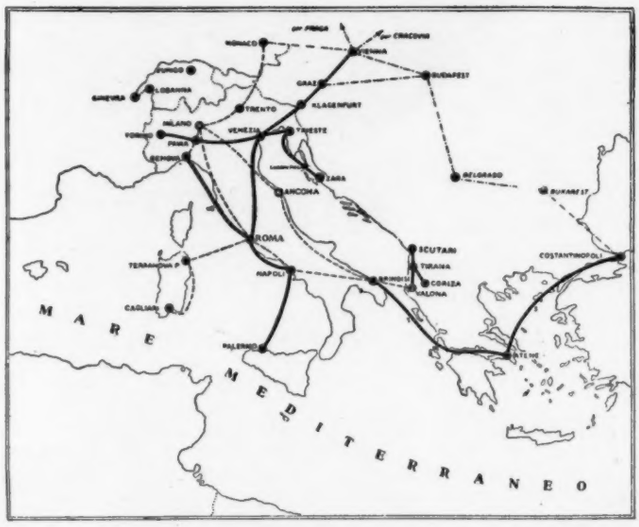
No. of flights	Miles flown	Flying (hours)	Mail lb.	Freight lb.	Luggage lb.	Passengers
REGULAR FLIGHTS						
484	100,850	1,076	1,084	10,230	21,900	1,814
OTHER FLIGHTS						
24	6,120	64				127
508	106,900	1,140	1,084	10,230	21,900	1,941

The air line Brindisi-Athen-Constantinople, was operated by the "Società Anonima Aero Espresso Italiana" from Aug. 1 to the end of December with two flights weekly in both directions. The total number of planned flights was 50; only 40 have actually taken place, nine of which had to be interrupted. This gives a percentage of regularity of 77.50 per cent., while five per cent. of the flights had to be interrupted owing to the bad weather conditions; 2.50 per cent. to machine defects, and 15 per cent. owing to engine troubles. There were no accidents to passengers.

Single Engined Planes Used

Total results of five months operation are as follows: mi. flown, 35,050; passengers carried, 57; mail in lb., 325, and freight in lb., 11,065.

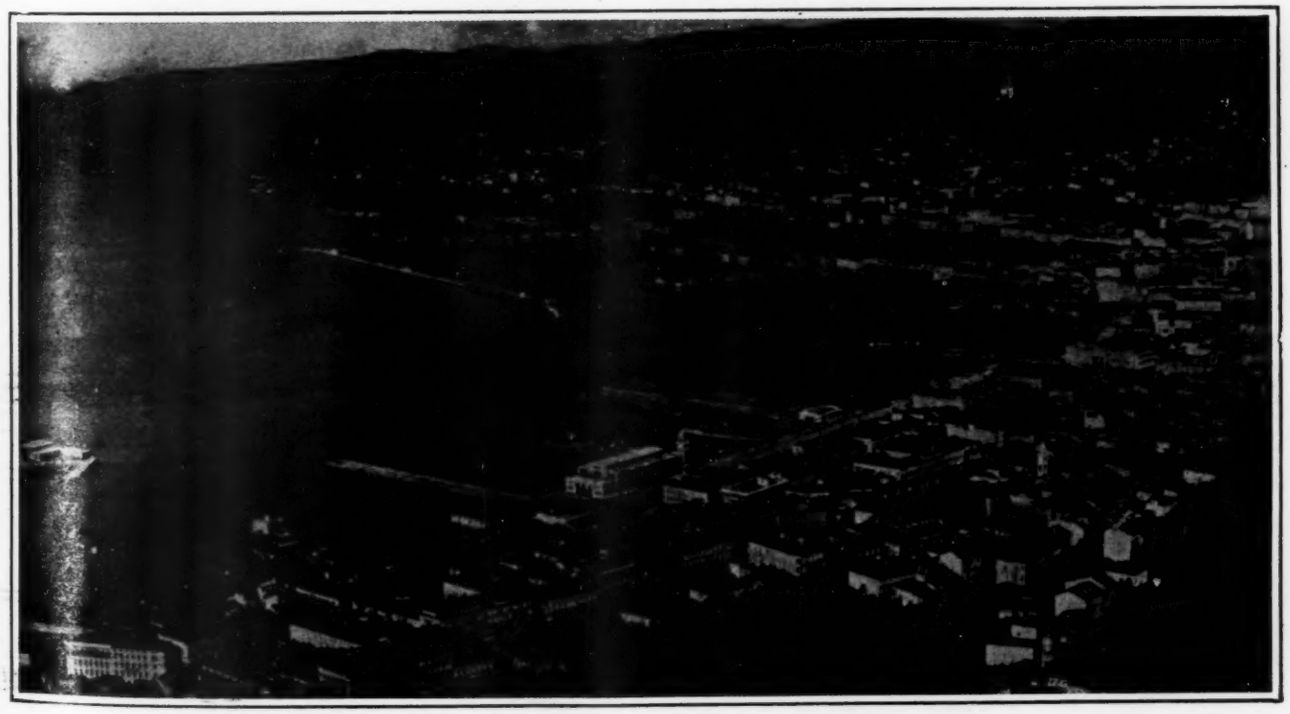
The Venice-Vienna line was operated with single engined planes (in October a Junkers three engined plane was added) from Aug. 18 to the end of December. During the first month the line was flown three times weekly. During the second month the service was operated daily, but only on the line Venice-Klagenfurt. From the third month the total number of flights should have totaled 196 but only 159 were actually carried out. Out of these 159 flights 70 covered the whole line and 44 the stage Venice-Klagenfurt (the service on the stage Klagenfurt-Vienna having been suspended for a month). On the other side 30 flights had to be interrupted owing to the bad weather conditions and were terminated on the following days. The regular flights amounted to 72 per cent. No accidents to passengers.



A map drawing showing the routes of the five Italian air lines.

It seems worth mentioning that the air service on the line Venice-Vienna across the Alps, considered hitherto as a formidable hindrance to air traffic, was maintained during the whole winter. As a matter of fact most European air lines suspend their activity during the winter time.

Total operation data referring to the whole line is as follows: mi. flown, 325,300; flying time 3,524 hr.; passengers carried, 3,991; mail in lb., 3,470; freight in lb., 90,300; available places on board the airplanes, 8,712; occupied places, 3,991 or 45.80 per cent.



An aerial view of the harbor at Trieste as seen on the Turin-Trieste route.

Design Reactions from the Spokane Pursuit Races

By COMDR. E. E. WILSON*

FROM THE standpoint of the Naval and Military Services, three events of the Spokane National Air Races are of consuming interest. These are: Event VII, Race for Pursuit Type Army Airplanes; Event XIII, Alexander Pantages Trophy Race for Navy Pursuit Type Planes, and Event XII, Spokane Spokesman-Review Trophy Free For All Military Pursuit Ship Race. The results of these races may be differently interpreted, the final interpretation depending upon how deeply the analysis goes. It is the purpose of this paper to analyze results from the standpoint of their bearing on military design and tactics.

Event VII was confined to airplanes of the First Pursuit Group, U.S.A., the entrants being three standard Curtiss P-1-Bs and one Boeing PW-9-A, all with Curtiss D-12 water-cooled engines. The event was won by Lieut. W. K. Cornelius at 158.412 m.p.h. Lieut. I. A. Woodring was second with 155.046 m.p.h. and Lieut. L. C. Mallory was third at 153.806 m.p.h. Lieut. W. A. Maxwell in the only Boeing PW-9-A was fourth with 153.583 m.p.h.

Speed Difference of 18.6 M.P.H.

Event XIII, the Alexander Pantages Trophy Race for Navy Pursuit Type Airplanes had five entries. It was won by Lieut. T. P. Jeter, U. S. Navy, in a Boeing FB-5 (Packard 2-A 1500 water-cooled engine) with a speed of 177.040 m.p.h. Lieut. G. F. Bogan, U. S. Navy, was second with 172.972 m.p.h. and Lieut. H. E. Regan, U. S. Navy, was third at 171.955 m.p.h. Comparing these three entries with the corresponding winners of the Army pursuit race, we note that the Navy race was won with a speed of 18.6 m.p.h. in excess of the best speed of the Army race.

This difference is due to the employment in the Boeing Fighters of a 525 hp. water-cooled Packard engine as against the 425 hp. water-cooled Curtiss D-12 of the Army standard pursuit airplane. The Navy entries came from one of the standard fighting plane squadrons of the Battle Fleet and their airplanes were the Navy Standard of a year ago. It was in a similar airplane that Lieut. G. F. Cuddihy, U. S. Navy, won the Free-For-All Pursuit Race at Philadelphia last year.

High Speed at a Sacrifice

This superiority in high speed of the Navy fighters is attained at considerable cost in other factors of performance. Manifestly the employment of increased power must carry with it increased fuel capacity if the full throttle range of the high powered plane is to be equal to that of the low powered plane. This in turn means an increased gross weight with a corresponding increase in wing loading if the same wing areas are employed. Although the power loading has gone down the wing loading has gone up and the results are felt, first, in an increased landing speed; second, in a reduced rate of climb; third, in a reduced ceiling; fourth, in reduced speed at altitude, and fifth, in reduced maneuverability at altitude. In other words, for a gain in high speed at sea level, we have sacrificed all of the desirable characteristics at altitude. The employment of high powers is an extremely costly procedure.

In the Navy pursuit race, Capt. F. O. Rogers, U. S. Marine Corp, was fourth in a Curtiss "Hawk" with a Pratt & Whitney Wasp engine. His speed being 159.838 m.p.h. This was 16.2 m.p.h. slower than the speed of the Packard Boeing Fighter. It is significant, however, that the Pratt & Whitney (Wasp) Hawk was 1.4 mi. faster than the standard Curtiss D-12 Army pursuit planes. Both the D-12 and Wasp are rated at 425 m.p.h. This proves publicly and conclusively, what has long been known as a result of Navy Flight tests, that, the air-cooled engine, far from being inferior from the standpoint of high speed at sea level, is definitely superior to the water-cooled engine of equal power.

Long Series of Flight Tests

The adoption by the Navy of the Pratt & Whitney Wasp in its fighters is the result of definite information obtained in a long series of flight tests conducted with the greatest care at the Navy Air Station, Anacostia. The detailed results of this analysis are not available for publication but the general principles can be revealed at this time. The tests were largely an investigation of the performance of Navy fighting aircraft at altitude and the final results are most illuminating.

For instance, just as the Curtiss D-12 Fighter was superior at altitude to the higher powered Packard Boeing Fighter, so was the Pratt & Whitney Wasp equipped fighter superior at altitude to the D-12. This superiority is very apparent from the standpoint of speed at altitude, rate of climb and maneuverability. The superiority of the high powered fighter in speed at sea level is due to the increased horsepower available but it is obtained at the expense of increased landing speed, the inevitable result of increased wing loading.

Factor of Landing Speed is Vital

Now this factor of landing speed is vital to the naval aircraft. If naval airplanes are to be of any use whatever at sea, they must have low landing speeds to permit their employment from the decks of carriers as well as in rough water. This landing speed factor has not been considered of so much moment in military airplanes and yet it was apparent at Spokane, and it has been even more strikingly demonstrated at landing fields having elevations of 5,000 to 10,000 ft., that this high landing speed restricts the employment of fighters to specially prepared fields.

Unfortunately, when we increase the wing areas of our airplanes sufficiently to reduce the landing speeds to a degree suitable for use at sea, we also reduce the high speed at sea level. This would be serious were it not for the fact that the reduction in wing loading enables us to pick up the lost speed at about 12,000 ft. and to greatly improve the speed from that point on. The light wing loading results in better rate of climb and better maneuverability. Manifestly, then for service use it is best to sacrifice speed at sea level in favor of the other desirable qualities.

With this position established it is interesting now to look

*Recently head of the Design Section of the Bureau of Aeronautics, now Senior Aide, Commander Aircraft Squadrons, Battle Fleet.

into the other event in the National Air Races, namely, Event XII, the Free-For-All Military Pursuit Ship Race. This race was won by Lieut. E. E. Batten with a speed of 201.239 m.p.h. His airplane was the Curtiss XP-6-A. These symbols indicate that the airplane had a Curtiss V-1550 high compression water-cooled engine and that it was equipped with PW-8 wings and wing radiators. The question may well be asked, "Does this burst of speed indicate the dawn of a new era in pursuit plane design?" The answer is found in the further results of the same event.

Second place in the race was won by Lieut. A. J. Lyon with a speed of 189.608 m.p.h. Lieutenant Lyon flew a Curtiss XP-6. In other words his airplane was similar to that of Lieutenant Batten, except that it had the tunnel type radiator. The difference in the two speeds is 11.6 m.p.h. which is a reasonable indication of the cost of the tunnel type radiator. It has repeatedly been shown that the wing radiator is totally unsuited to service use not only because of its vulnerability but also because of its great difficulty of maintenance. The winner of the race then has not taught us anything of value in the design of service type airplanes.

Not Suited for Service Use

Third place in the race was won by Lieut. T. P. Jetter with a standard Navy FB-5 (Packard 2 A 1500 engine) at a speed of 176.940 m.p.h. The Navy entrants used the standard compression Packard engine which develops about the same power as the new Curtiss V-1550 engine when the latter also employs standard compression. In the race the two Curtiss 1550's were employing high compression ratios and high crank speeds developing high power. It is well known that such high compression ratios and high crank speeds are not suitable to service use, and so the winner of second place has not demonstrated anything of particular value in the design of fighting airplanes.

It has previously been shown that, as a result of the comparative tests at Anacostia, the Navy abandoned the use of the high powered water-cooled Packard engine in favor of a lower powered Pratt & Whitney Wasp air-cooled engine, because of superior performance at altitude. The winner of third place, then, has shown nothing of interest in fighter design. The Curtiss Hawk with the Pratt & Whitney engine flown by Lieut. F. C. Rogers did 161.559 m.p.h. in this same Free-For-All Pursuit Race, being exceeded in speed only by the FB-5 and a special Boeing PW-9-C. From this it is manifest that, although the Free-For-All Pursuit Race as a race showed some interesting high speeds, it conveyed no useful information in the design of fighting aircraft intended to fight at altitude.

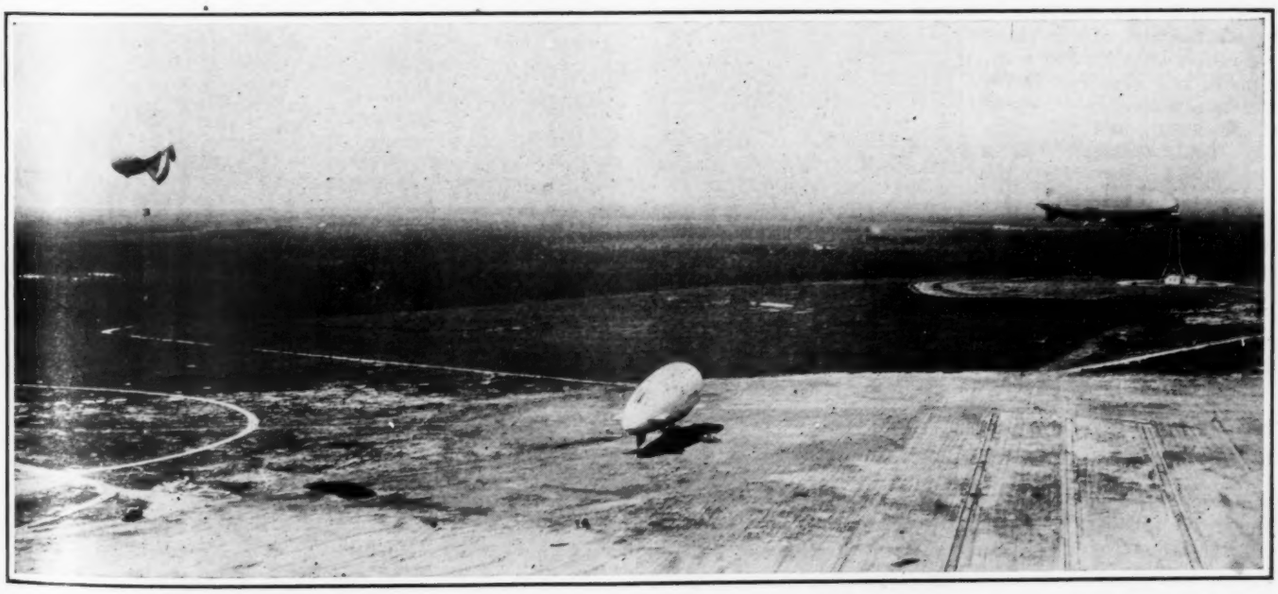
It has frequently been stated that airplane racing bears the same relation to airplane development as does automobile racing to automotive design. This is a very close analogy. The automobile race has helped developed speed in automobiles but for the other factors of automotive design we have to look elsewhere, to the proving ground, for the final result. So also in airplanes must we look to our flight tests for development of those qualities that go to make good fighting airplanes. The speed shown at the Spokane races indicate the result of the combination of good engines, good airplanes and good flying. They must not be considered, however, as interpreting the trend in pursuit design nor must they be allowed to influence this design too much. The American air-cooled aircraft engine retains its superiority, both at sea level and at altitude when the results are reduced to a common denominator. No challenge of a high compression, high speed, wing radiatored, heavily loaded water-cooled fighter can shake the air-cooled engine's unasssailable position at high altitude.

Aero Club to Buy a JN4

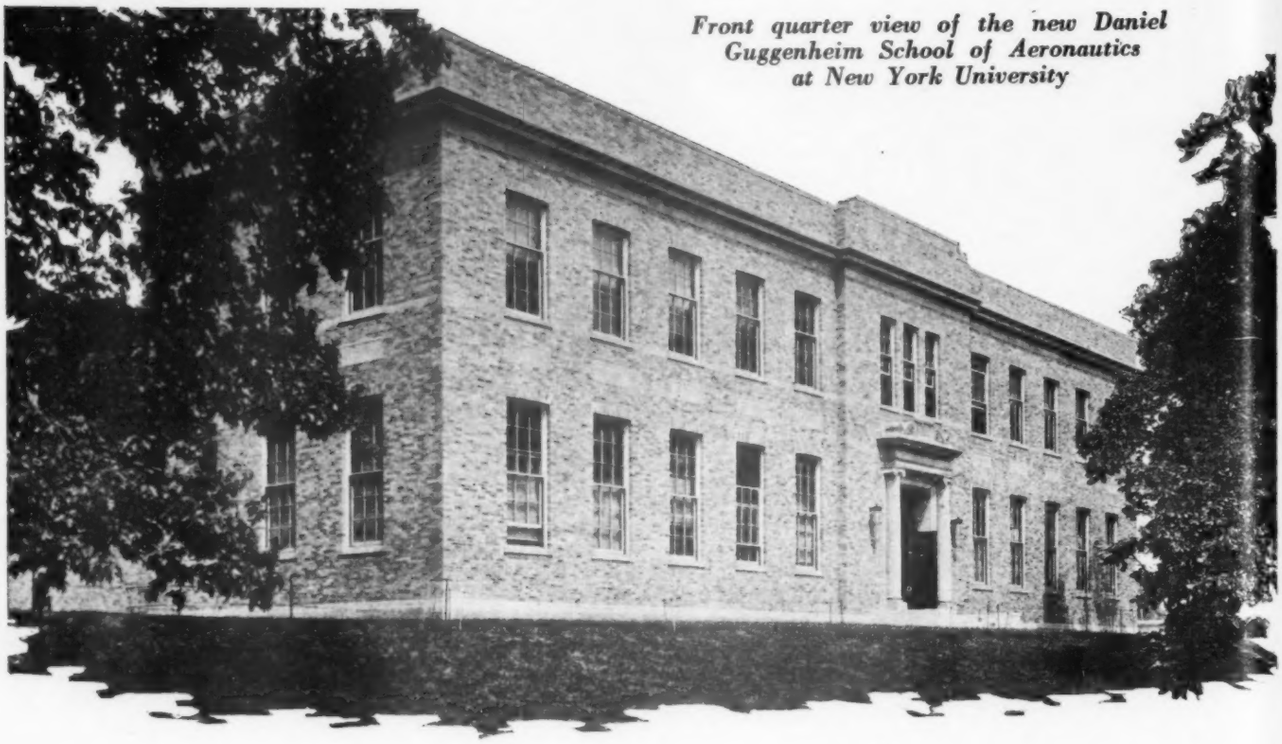
ACCORDING to a statement issued by the American Society for Promotion of Aviation the Queens Aero Club of Queensboro, L. I., has obtained sufficient money for the purchase of a JN4 plane which is to be used for instruction and joy flying by its members. Flying instruction is to be given by Colonel Roberts, ex-R.F.C., Capt. August Sparre, ex-French Air Service, and Lieut. J. O. Kelley, U. S. Air Service Reserve.

The Queens Aero Club is the result of an expansion of the Astoria Aero Club, Astoria, L. I., which was organized by the A.S.P.A. in July with a membership of ten. Since that time over 100 applicants have been admitted.

America's Queen of the Air at Rest



A general view of the Lakehurst, N. J. airport, showing at the extreme right the U.S.S. Los Angeles at her mooring mast. At the extreme left is the Army "Blimp" J-3 and in the middle is an Army dirigible. Between this and the Los Angeles can be seen a plane gliding in to land.

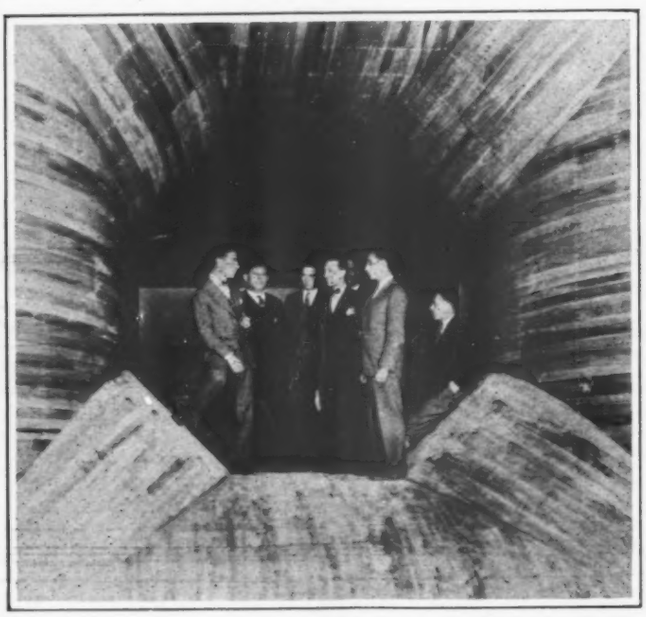


Front quarter view of the new Daniel Guggenheim School of Aeronautics at New York University

The Daniel Guggenheim School of Aeronautics

A SHORT TIME ago the Daniel Guggenheim School of Aeronautics was formally opened at its new building at New York University, University Heights, New York. This new building is a two story structure, 120 ft. by 85 ft. with a one story projection housing two wind tunnels, one four feet in diameter attaining an air speed of 50 m.p.h. and the other nine feet in diameter with an air speed exceeding 100 m.p.h. In addition, the building is equipped for aeronautical instruction, structural tests and research. There is an up-to-date model shop equipped with tools and machinery for the construction of wind tunnel models and small aircraft parts. A power plant laboratory, now in the process of completion, will be equipped for testing complete airplane engines, the study of cooling and lubrication problems, and for testing typical single cylinders.

The larger wind tunnel is of the wire balance, double return type having an experimental chamber nine feet in diameter and nine feet long. The air is forced through by an eight bladed propeller 13 ft. 8 in. in diameter, driven by a 250 hp. motor. The determination of the bends for the return of tubes of the wind tunnel was the result of considerable research and experiment. Two former students, Edward H. Bowles and John C. Mazzei performed a series of experiments as the subject of their thesis for their Bachelor degrees. They compared the velocity distribution and power absorbtion of the Crocco, Witoczynski and Gottingen types of entrance bends for the tunnel. These experiments and also later experiments were performed on a ninth size model of the large tunnel. From the results of this work a final design was made and the full size wind tunnel was constructed. The tunnel is now in operation though the work of completely calibrating it will require some time.



Instructors and students in the experimental channel of the nine foot wind tunnel.

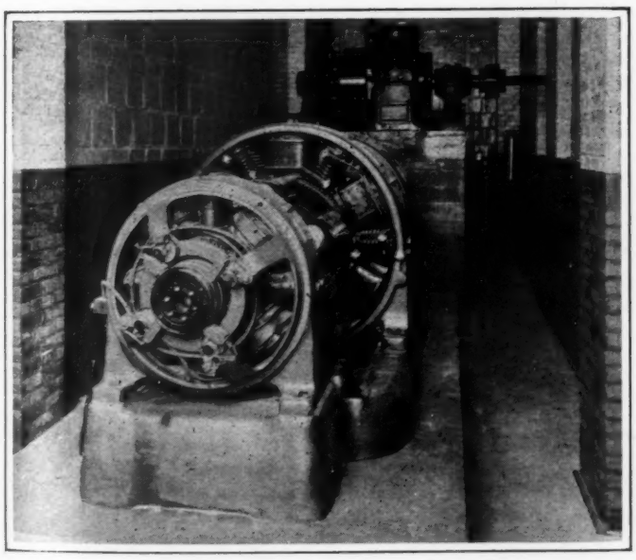
The experiments by Bowles and Mazzei were performed upon a model tunnel with no return tubes. In that way when the propeller sucked the air around the entrance bend it had a uniform

flow at the start as it came from the undisturbed air. At the working section a series of traverses with various types of bends were taken to determine the type of bend that gave the most uniform flow. It is at this working section or experimental chamber where, on the full size tunnel, the airplane model is placed and a uniform air flow, approximating actual flight conditions, is desired.

The model, as in the full size tunnel, had an octagonal working section. It was five inches on a side, making it one foot in diameter at this point. The entrance cones and the working section were of copper while the entrance bends and entrances were of galvanized iron and wood. All cracks and joints were sealed and smoothed with plastecene. A four bladed wood propeller was driven by a belt from a calibrated motor. The tests were each made with a different type of bend. Traverses of 159 readings each were taken to determine the pressure distribution over the entire working section. The air speed was 30 m.p.h. Two traverses for each type of bend were made; one with and one without a honeycomb at the entrance.

Three Types of Bends Studied

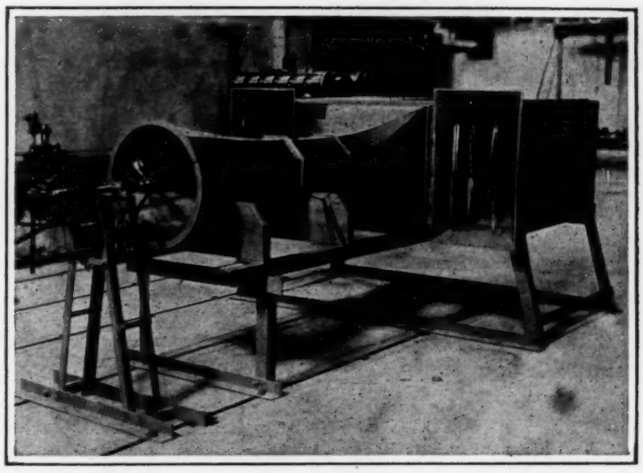
The type of bends studied were the Crocco, Witoczynski and Gottingen. The Crocco type of tunnel with the bends as the arc of a circle, showed a higher velocity at the center of the experimental chamber than at the sides. In addition this type of bend absorbed more power than any of the others. The bends of the Witoczynski type tunnel are designed to be streamline, giving a much better distribution of flow with 16.3 per cent. less power for the same speed at the working section. The Gottingen type tunnel deflects the air around the bends by a number of vanes. In the first two types mentioned, tests were made with and without a honeycomb at the entrance to the experimental chamber and it was found that the honeycomb, though it consumed some power, improved the flow. The flow with the Gottingen type bends was so near perfect that the improvement due to the honeycomb was hardly appreciable. The power consumption with



The motor generator set in the foreground and the 250 hp. d. c. motor, in the rear, used to drive the New York University nine foot wind tunnel.

Gottingen type of bend was very high due to the work done on the air pulling it through the vanes.

When the conclusions were drawn regarding the type of bend to be used it was decided that theoretically, without doubt, the Gottingen type of bend was best and from the practical viewpoint, the Witoczynski type was to be recommended. It was concluded that the Witoczynski type of bend gave a better velocity gradient and was more practical both financially and mechanically. As the actual tunnel at the bends is 18 ft. high, it was immediately apparent that maintenance and construction of a number of vanes (as in the Gottingen type) of that height would be considerable. The Witoczynski



The one ninth size model used in determining the bends of the full size wind tunnel.

bend was decided upon in favor of the Crocco as it gave a better velocity distribution with a lower power absorbtion.

After the series of experiments were completed it was found that the 12 in. wind tunnel was very handy for working out minor problems not requiring a great deal of accuracy. The power required to perform these experiments was almost negligible when compared to that required to run a full size tunnel.

The actual wind tunnel is 105 ft. long and 47 ft. 6 in. wide; it is in a steel frame building. The floor of the return tubes is of concrete, while the walls and ceiling are of special plaster. The experimental chamber is of spruce in a wood frame. This section which is nine feet long is removable for the installation of a propeller and motor for propeller testing.

An arrangement is now being built whereby airplane models fitted with rotating scale size propellers may be mounted in the tunnel. Heretofore wind tunnel models were tested without a propeller attached and thus without any slip stream effect (which must be corrected for.).

The air is drawn through the tunnel by an eight bladed duralumin propeller driven by a 250 hp. direct current motor. The power plant is in a room adjoining the wind tunnel, the electric motor, which is supplied by a large motor-generator set, can be controlled from this room or from the instrument or balance platform above the experimental chamber of the tunnel. On this platform are all the controls and instruments. The forces of the wind tunnel model are measured by a wire suspension type balance with electrically automatic balancing weight arms.

Tunnel in Operation for Three Years

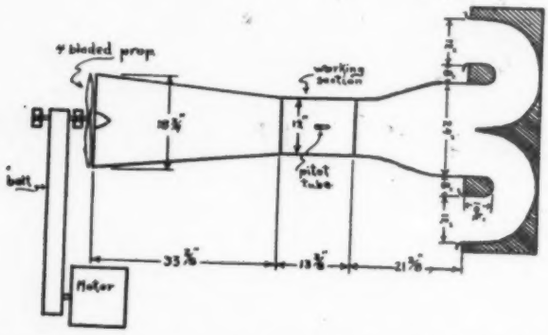
Adjacent to the main wind tunnel, outside the building proper, is an additional structure housing a four foot, square section wind tunnel of the conventional British National Physical Laboratory type. This tunnel has been in operation almost incessantly for the last three years. It has been used to assist numerous manufacturers and designers in the solution of their problems in addition to the regular work carried on by the staff. Among those manufacturers who have had models of their products tested in this four foot wind tunnel are included Fairchild Airplane Mfg. Co., Sikorsky Mfg. Corp., Wright Aeronautical Corp., Keystone Aircraft Corp., and the Atlantic Aircraft Corp., builders of Fokker planes.

Perhaps one of the most interesting sections of the building is the laboratory for the testing of structural parts. It is in one corner of a large room housing the power plant testing apparatus. On the wall, attached to one of the main structural members of the building is a universal mount for rigging airplane surfaces for sand testing.

In this corner is a rib testing machine of the type developed at the university. It is said that this type of machine has

been accepted as standard by the Navy and is now under consideration by the Army Air Corps. It is expected that it will be recommended by the Department of Commerce.

In this machine the ribs are tested in the inverted position with the loads being applied in the downward direction. A special rig takes care of reversed loads at the nose, which may occur on some wings at reversed angles of attack. The ribs are loaded by rods in tension pinned to a bell crank and thence to a lever. The lever is calibrated so that the load on the rib can be determined quickly: Each lever is loaded with



The one ninth size model wind tunnel fitted with the Crocco type of bends.

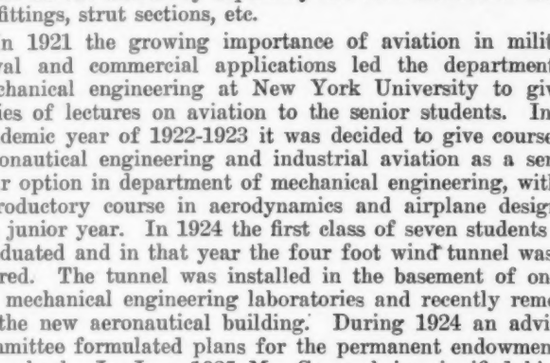
a weight corresponding to one load factor at that point, as calculated from the loading diagram. All loads are applied simultaneously; the loads can be applied wherever desired on any rib. In a rib built up like a truss, the loads are usually applied where the members meet. The levers with the weights are movable and quite easily adjusted. The spar loads are taken up one half on either side of the spar as close to the place of support as possible.

A few of the main dimensions of the rib testing rig are as follows:

maximum chord length .....11 ft.
maximum length of spar section .....5 in.
(2 to 3 in. is a good average length)
supporting pins .....½ in. bolts
lever calibration, full loads .....15 load factors
" " half loads .....7½ load factors
lowest load factor, full loads 3½
" " " half loads 1¾

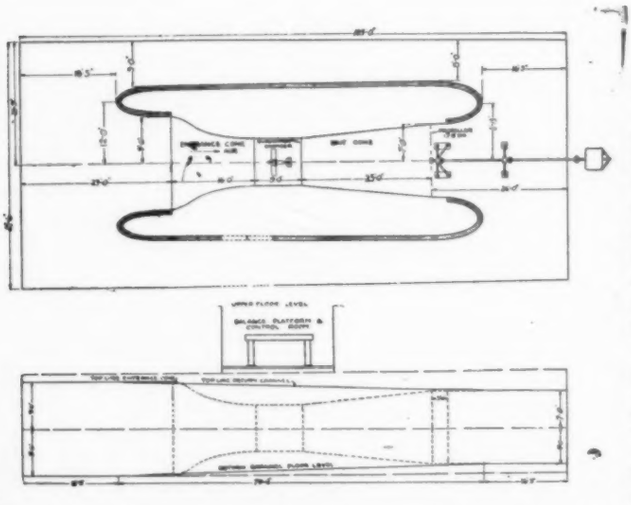
In front of the rib test rig is a space set aside for static or dynamic tests such as chassis or fuselage experiments. This rib testing machine has been used to determine the strength of a considerable number of commercial and experimental airplane ribs. Ribs have been tested for the Air Mail, Fairchild Airplane Mfg. Co., Wright Aeronautical Corp., Chas. Ward Hall, Inc., and many others. In addition there is at the disposal of the aeronautical school the engineering laboratories of the university especially for such structural testing as fittings, strut sections, etc.

In 1921 the growing importance of aviation in military, naval and commercial applications led the department of mechanical engineering at New York University to give a series of lectures on aviation to the senior students. In the academic year of 1922-1923 it was decided to give courses in aeronautical engineering and industrial aviation as a senior-year option in department of mechanical engineering, with an introductory course in aerodynamics and airplane design in the junior year. In 1924 the first class of seven students was graduated and in that year the four foot wind tunnel was acquired. The tunnel was installed in the basement of one of the mechanical engineering laboratories and recently removed to the new aeronautical building. During 1924 an advisory committee formulated plans for the permanent endowment of the school. In June 1925 Mr. Guggenheim signified his intention of endowing the Daniel Guggenheim School of Aeronautics with $500,000. One year later after considerable planning, ground was broken for this new laboratory.



The Gottingen type of wind tunnel bend with deflecting vanes.

In addition to the aeronautical engineering course, all Arts and Engineering students at the University, who are physically fit, are required to take military training. As there are both Infantry and Air Corps units, those so desiring may join the Air Corps. After two years of compulsory military training, including a thorough ground schooling, those students who show proficiency may continue their military training until graduation and are thus eligible for reserve commissions in the Officers Reserve Corps of the U. S. Army.



Plan and side elevation of the nine foot wind tunnel at the Guggenheim School of Aeronautics, New York University, N. Y.

Airplane Inspector Examination

THE UNITED STATES CIVIL SERVICE COMMISSION has announced an open competitive examination for the position of Airplane Inspector to fill a vacancy in the Air Service, Procurement Section, 39 Whitehall St., New York City at $2200-$3000 per annum. The entrance salary is usually $2200 to $2400, unless the applicant is unusually well qualified. Future vacancies requiring similar qualifications at these or higher or lower salaries will be filled as a result of this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

Applicants should apply at once for form 2118, stating the title of the examination desired, to the Secretary of the Second Civil Service District, Custom House, New York, N. Y.

Applications must be on file with the secretary not later than October 28, 1927. All applications should be properly executed excluding the medical certificate and filled with the District Secretary at New York prior to the hour of closing business on that date.

Waco 10 With Caminez Engine Tested for Fuel Consumption

ON SATURDAY, Oct. 1, the Waco 10 airplane equipped with the Fairchild Caminez cam engine made a flight to determine the fuel consumption of this plane with full load at cruising speed. The plane, which carried pilot, passenger and 36 gal. of gasoline and 4¾ gal. of oil, flew for seven hours during which time it covered a distance of approximately 600 mi. At the end of the flight two gallons of gasoline and three and one-half gallons of oil were drained from the tanks so that the total fuel consumption was 34 gal. of gasoline and one and one-quarter gallons of oil. The flight averaged a fuel consumption of 4.8 gal. per hr. and covered a distance of about 18 mi. to a gallon of gasoline. By the installation of the cam engine in a Waco 10 the cruising range of this plane has been considerably extended and the fuel economy improved over various other types of power plants which were employed in this plane.

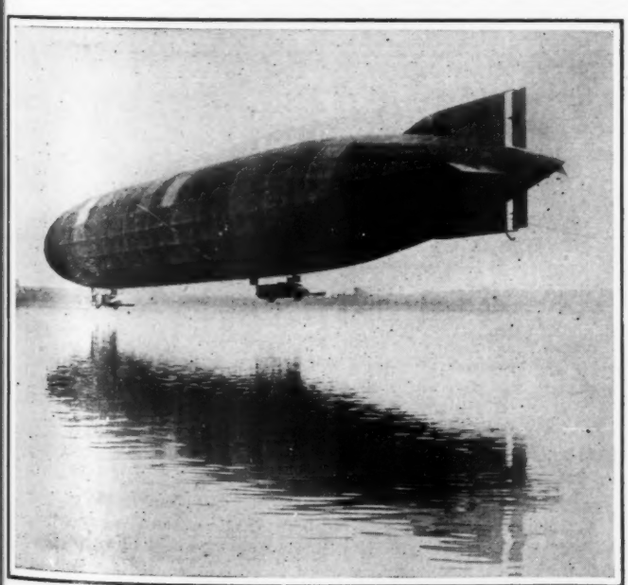
Flown Against an OX5

In a preceding test a Waco 10 cam engined airplane was flown against an identical plane with an OX-5 engine. With the OX-5 operating at full throttle the fuel consumption in this plane was 10 gal. per hr. The cam engined Waco maintained the same speed when throttled to 820 r.p.m. at which speed its gasoline consumption was 5½ gal. per hr. The Caminez cam engine is rated at 1200 r.pm.

These tests have demonstrated the fuel economy that can be expected with the cam engine. This fuel economy is accounted for by the low specific fuel consumption of the engine combined with the high efficiency and the low speed propeller. Due to the light weight of the cam engine power plant, together with its low head resistance, the power required to fly an airplane with the Cam engine installation is also reduced; this contributing further to fuel economy in flight. The Fairchild Company states that its dynamometer tests show that the cam engine probably has lower specific fuel consumption than any other aircraft engine yet developed operating with the same fuel and compression ratios. Fuel consumptions of .45 lb. per hp. hour are readily obtained with a compression ratio of only 5 to 1. It accounts for this low fuel consumption by the fact that the piston motion obtained with the cam mechanism gives better thermal efficiency in the engine. The motion obtained with the cam is similar to an inverted crank motion, which allows the piston to dwell longer on top center than with the usual crank shaft engine thereby giving the fuel more time for complete combustion at the beginning of the expansion cycle. Coupled with this more efficient piston motion the cam engine has a high mechanical efficiency due to the use of anti-friction ball and roller bearings throughout. By using a duplex carburetor with a double manifold on this four cylinder engine, very effective carburetion is obtained. The use of large cylinders of proper design also contributes to the high thermal efficiency of this engine.

The low specific fuel consumption of the cam engine combined with the high propeller efficiency obtained due to its low r.p.m. is of considerable advantage where duration flights or large cruising range is desired. Another advantage of the slow speed propeller is its effectiveness at take-off so that large useful loads can be carried with the cam engine. The Fairchild Company therefore believes that the cam engine has decided merit for endurance tests and intends to conduct tests towards developing a plane with this engine for breaking the present endurance record that is now held by Germany.

Once Upon a Time



A photo taken during the late war showing a German Zeppelin making a landing on the water at Mueggal See. It is stated that large floats attached to the engine compartments made such a feat possible.

A.C.C.A. Holds Annual Election

AT THE sixth annual meeting of the Aeronautical Chamber of Commerce of America, Inc., Col. Paul Henderson, general manager of the National Air Transport, Inc., was re-elected president. The other officers elected include First Vice-President Sherman M. Fairchild, president of the Fairchild Aviation Corp.; Second Vice-President Chance Vought, Chance Vought Corp.; Third Vice-President L. B. Valentine, president of Valentine and Co.; Treasurer C. H. Colvin, Pioneer Instrument Co.; Secretary H. F. Pitcairn, president of Pitcairn Aviation, Inc.; Assistant Treasurer and General Manager S. S. Bradley, and Assistant Secretary Owen A. Shannon.

In addition to the above, the Board of Governors are: Maj. Gen. John F. O'Ryan, president of Colonial Air Transport, Inc.; E. N. Gott, president of Keystone Aircraft Corp.; Charles L. Lawrance, president Wright Aeronautical Corp.; J. L. Callan, president of Airships, Inc.; E. A. Johnson, president of Boeing Airplane Co.; Frank H. Russell, vice-president of Curtiss Aeroplane and Motor Co.; and Maj. Lester D. Gardner, publisher of AVIATION.

Adds Course in 'Chute Work

THE WARREN SCHOOL OF AERONAUTICS, Los Angeles, Calif., announces that a course in parachute work has been added to its curriculum. The course will be in cooperation with the Russell Parachute Co. of San Diego. Mr. Russell, president, and his assistants will lecture on the care and maintenance of both the parachutes and the harness. They will also give instructions on the packing, repair and use of the parachute harness.

The Warren School of Aeronautics is fortunate in obtaining James Russell for this course of lectures. Mr. Russell is one of the foremost authorities on parachute work in the United States.

Aviators' Banquet on Nov. 11

AVIATORS' POST No. 743, American Legion, has announced that its annual banquet this year will be held on the Park Central Hotel roof on Armistice night, Nov. 11

Plans are now under way to make the affair the greatest in the history of the Post. Included in the program will be speeches by men well known in Army, Navy and civilian aviation circles, which will be broadcast over the radio.

The Cost of Successful National Distribution

By WILLIS PARKER

UNTIL THE last few months airplane manufacturers have been concerned more with the refining of their products and stabilizing and lowering costs of production, than with the problem of national distribution. Failure to consider the cost of distribution is said by some to be the real cause of many small manufacturers going to the wall; the retail selling price was based more upon manufacturing costs than upon selling costs.

At present we may assume that the industry is upon a stable basis as far as manufacturing is concerned. But what may we expect in regard to nation wide distribution?

A recent investigation indicates that the industry has much to learn on this subject, and that there are very few manufacturers who have adopted definite safe and sane distribution policies, analogous to the distribution organizations of successful manufacturers in other lines such as automobiles, radios, etc. However, there seems to be seven points to be considered in successful national distribution. Thev are as follows: First; a well financed factory sales organization. Second; a well financed dealer organization. Third; a definite percentage of sales costs to be devoted to advertising. Fourth; a well balanced distribution of the dealer organization; Fifth; cost of transporting planes from the factory to the dealer's landing field. Sixth; some method of absorbing the cost of teaching purchasers how to fly, and seventh, all year around factory production.

Forty Per Cent. of Retail Price

"Forty per cent. of the retail price of an airplane represents the cost of distribution", asserted one manufacturer. "And 20 per cent. of the retail cost represents the dealer's commission. This is better than half of the total cost of distribution.

"To our factory cost we have added 20 per cent. to cover the expense of maintaining a factory sales organization. This 20 per cent. covers advertising, salaries of salesmen and pilots. This is the lowest percentage we figure is safe in normal times. During the summer of 1927 our sales organization made a profit in as much as public enthusiasm had reduced sales resistance".

This manufacturer does not crimp the activities of his sales department by being penurious with finances. His sales manager never hesitates to take a thousand mile jaunt for the purpose of getting a distributor back into line or to demonstrate the practicability of the machine he is flying.

To better illustrate the point, we will take a fictitious figure of $3,000, representing the retail cost of the plane, F.O.B., the factory. The dealer is allowed 20 per cent. for commission. This amounts to $600. The factory sales department is permitted 20 per cent. of the factory cost for sales expense. Thus the difference between $3000 and $600 is $2,400 which includes the factory sales expense and is six-fifths of the factory cost. Therefore the sales department is allowed $400 to sell each plane.

Included in the factory sales cost is the cost of advertising. There are two ways of figuring this item, according to what our investigation disclosed. One is to count as advertising only the expense attached to display copy in newspapers and magazines and the direct mail advertising used in conjunction. The other method is to include the demonstration flights of the sales organization.

One manufacturer expects 10 per cent. of the factory cost of a plane to be devoted to advertising. This in one-half the amount allowed the sales organization, but it includes printed publicity as well as demonstration flights. Another manufacturer separates his advertising and sales expense, permitting the advertising department from 5 to 10 per cent. of the factory cost of a plane for publicity and granting the sales organization a like percentage for its effort. Since most of the work of the sales department is actually advertising one would conclude that the first method was the better.

One Manufacturer Has 31 Distributors

The dealer organization is next in importance. Thus far nothing better has been devised than the allotment of territory to distributors who in turn appoint their dealers or organize their own sales forces. The distributor-dealer or dealer must be financially able to meet his obligations, which consist of maintenance of demonstrator, offices, his local advertising campaigns and meeting the demands for installment purchasing, which is an angle in distribution which we may well expect to enter the aviation field.

Some manufacturers divide the territory according to states, but division according to population appears to be the best plan. Per capita wealth should also be given consideration. The tendency will be toward narrowing down the territories to provide more intensive sales effort.

One manufacturer has 31 distributors and they cover practically the entire United States. In one state there are two distributors, some distributors have but one state and others have two or more, according to the density of population. Dealers must be protected if the manufacturer expects complete cooperation for them. It is understood that a certain manufacturer has lost several good dealers because he granted discounts equal to the dealer's commission to persons coming direct to the plant to make their purchases. The world is full of people who endeavor to buy goods or service for less than the regular price by going direct to the producer.

Manufacturers Should Aid Dealers

Dealer helps in the nature of sales letters to prospects, distribution of a house organ, sharing the expense of local advertising should be given the dealers. The house organ of one aircraft company goes to about 8,000 persons scattered from one coast to the other and many of them are going regularly once a month to prospects.

The president of one of the most prominent aircraft companies explains his distribution organization as follows:

"Our first effort was to form a selling organization made up of district dealers with exclusive sales rights in protected territories. This plan was similar to the ordinary competitive dealer organization but varied somewhat. The ordinary competitive contract requires the dealer to purchase a certain number of planes for his territory regardless of his ability to sell them there. Our plan requires that a demonstrator shall be in use or ready for use at all times in the dealer's field, and we recommend that with this plane he shall offer to train students. We know that this will help him sell our planes while, at the same time it will increase general interest in aviation. In other words the question which we ask the dealer

is not 'How many ships can you sell?' but, 'How many ships can we help you sell?'

"To interest the non-flying public our dealers, backed by all the help that the home office can give them, appoint sub-dealers and representatives throughout their territories and this gives us accredited agents (representatives) in each city and village in the nation. Sub-dealers must be fliers and must keep a demonstrator ready for operation. Representatives are not necessarily fliers and need not maintain demonstrators, but each must be equipped with a model and other sales equipment and report progress, from time to time to the dealer and to the home office. Representatives are paid a commission on the sale of planes, student instruction fees and passenger flight returns and are expected to boost commercial aviation whenever that is possible. We have no difficulty in finding representatives. At least one young man, intensely interested in aviation, is in every town of the United States. Such young men eagerly welcome the opportunity to become one of our representatives for the connection may lead to larger opportunities."

Average Shipping Cost 15 Cents Per Mile

The fifth problem in distribution is that of transporting planes from the factory to the ultimate consumer. When planes are sold at a fixed price F.O.B. the factory, transportation costs must of necessity have an important bearing upon the customer's buying mood. Manufacturers must reduce this cost as far as they can.

The present railroad freight rates makes the average cost of shipping a plane by railroad about 15 cents a mile. This is due to the inability of the manufacturer to load the car to its capacity. Unless the ships are completely knocked down it is impossible to get more than three medium sizes planes into a modern freight car. It costs from $50 to $100 to crate a plane, depending upon the size. The weight of three medium sized planes crated is around 8,000 lb. But the shipper must pay for a minimum weight of 16,000 lb.

Thus far the more desirable transportation plan is that of ferrying and the cost of this service is practically the same as the cost of shipping by freight. The advantage in ferrying is that the plane does not have to be dismounted after it has been tested out. The cross country flight gives the ship its final test and it should arrive at its destination in perfect condition.

"Regardless of how elaborate a set of instructions for rigging a plane we may include in a rail shipment, it is seldom that the consignee assembles the plane precisely as it should be to obtain perfect balance", said one sales manager.

Some of the railroads, it is understood, are assisting airplane manufacturers in an effort to get a lower classification from the interstate commerce commission so freight shipments will not be so high. Obviously if the transportation cost is too high it will interfere with the sale of planes and restrict the sales territory.

All year around production will have a bearing on distribution. One manufacturer is planning capacity production this winter in an effort to create a stock of planes for sale in the spring. He cannot afford to tie up all of his money in stock so he is expecting to ask each of his dealer-distributors to take a number of planes and pay down a small percentage of the cost and the balance in the spring when sales pick up. The plan is to ship the planes by freight to the dealer's warehouse. They will be assembled and rigged in the spring, either by an expert mechanic furnished by the dealer himself, or by the factory. The number of planes each dealer will take will be based upon his previous sales record. If there is any increase in distribution costs on account of this plan, it will be offset by a decrease in manufacturing costs made possible by capacity production every week.

Instruction Cost a Problem

As the industry expands, the dealers and the manufacturers must work out some plan of absorbing the cost of teaching people to fly. At present the purchaser must pay for instruction. Learning to run an automobile is included in the purchase price and it is not to be expected that the public will be willing for long to pay for learning how to fly the machines they buy.

"We can make planes faster than we can teach people to fly", said one manufacturer. "We must speed up instruction and to do that we must either eliminate the charge or reduce it to such a minimum that none will object to paying the price. It would be better to include the teaching costs in the cost of the plane and charge it to distribution."

Headed for the Creek

J. R. Russell, parachute jumper, coming down from the upper regions near San Diego, Calif. It looks as though he would land in the creek but the report states that he landed safely on terra firma.

Ferry Pilot Battles Tornado Winds in a Laird Commercial

AN INTERESTING bit of information concerning the performance of a Laird plane under adverse weather conditions is contained in a letter received from the Von Hoffmann Aircraft Co.

A pilot of this company, John Campion, left Anglum, St. Louis airport on the morning of Sept. 29 just an hour before the tornado dropped down on St. Louis. He was ferrying a Laird plane belonging to Lloyd F. Layne of Memphis, back to that city. There was a 35 m.p.h. headwind blowing when he took off and it increased in velocity as he went south. In order to get around the storm he went as far east as Metropolis, Ill., which is more than fifty miles east of the St. Louis-Memphis route, before turning west again.

The Laird is equipped with a Whirlwind engine and is reputed to have a high speed of 142 m.p.h. With the throttle wide open Campion was only able to make an actual speed of around 50 m.p.h. He reported that on several occasions the plane was on the point of going into a nose dive. Finally Campion, who was a wartime pilot, landed the plane on a cotton plantation in Arkansas after being in the air five hours. The plane was refueled and the remaining 50 mi. of the trip covered the following morning. The plane showed no bad effects from the strenuous trip.

Design Your Own Airfoils

An Interview With

COL. V. E. CLARK

MOST OF the successful airplanes in the United States use airfoils designed by Colonel Clark. Among the most commonly used of his airfoils are the U.S.A. 27 and the Clark V and Clark Y series. These have been used on Colonel Lindbergh's Ryan monoplane and many others of the more successful commercial strut-braced monoplanes; the Vought "Corsair", the Navy PN-10, and the Wright "Apache", all holding world's records; the Glenn Martin Navy T3M, the National Air Transport Mail and Express Planes, the Douglas "Round-the-World" cruisers, the Curtiss Pursuit and the Curtiss Observation, the Consolidated Army and Navy training planes, the Consolidated "Courier", the Douglas Mail Planes and the Douglas Observation and Transport planes, and on many other successful Military, Naval and commercial planes. The characteristics of the Clark Y as obtained by high pressure tests at the National Advisory Committee wind tunnel at Langley Field are shown in Fig. 1.

We asked Colonel Clark one day: "How do you go about designing these airfoils of yours? What is the secret?"

He laughed and said: "I would gladly tell you the secret if I knew of any. The airfoil sections just seem to lay themselves out and, when good luck attends, fair results are attained.

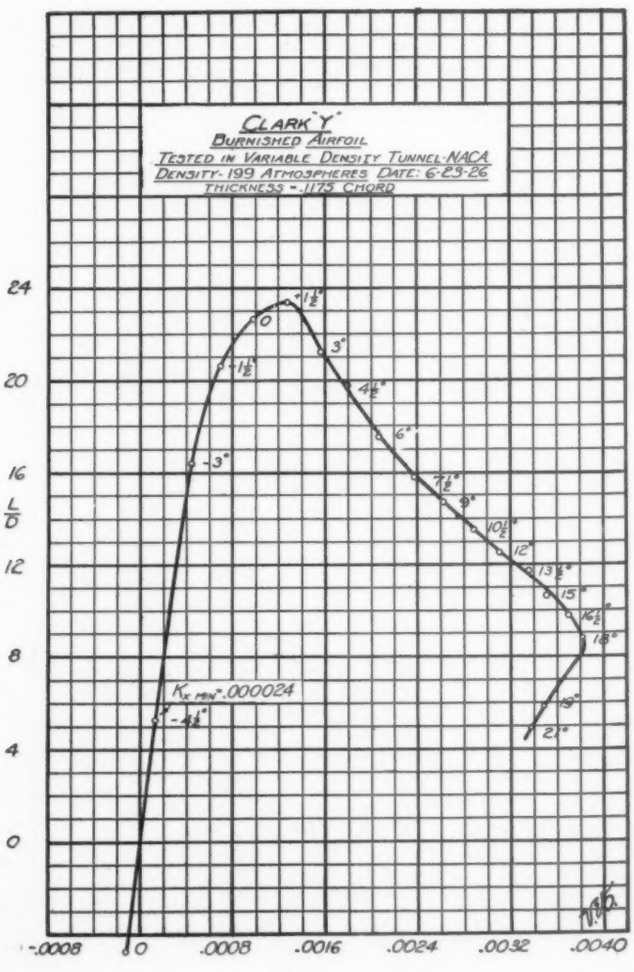


Fig. 1.

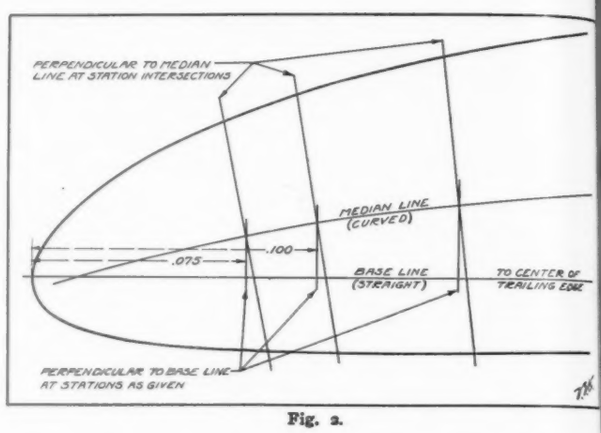

PERPENDICULAR TO MEDIAN LINE AT STATION INTERSECTIONS
MEDIAN LINE (CURVED)
.075
.100
BASE LINE (STRAIGHT)
TO CENTER OF TRAILING EDGE
PERPENDICULAR TO BASE LINE AT STATIONS AS GIVEN

Fig. 2.

"My airfoils have been selected for various airplanes because comparative tests made in wind tunnels at a low value of the Reynold's Number have indicated that they are fairly good. But, you know, the tests made by our National Advisory Committee for Aeronautics in their variable pressure tunnel at Langley Field prove, if we are to accept them, that even for the purposes of comparison, tests made at a low value of the Reynold's Number are useless and misleading in many ways. Airfoil A may appear far superior to Airfoil B for a particular purpose when tested with a pressure of one atmosphere, whereas, when tested at twenty atmospheres, Airfoil B appears to be much better than Airfoil A for the same purpose. And no one has traced sufficient consistency in scale variations to justify a reliable system of rules for the prediction of full scale characteristics, having given the test results at low scale.

Impossible to Test Every Airfoil

"Therefore it is fair to assume that there are many airfoils which would be more popular than mine if they had been tested with twenty atmospheres' pressure.

"Unfortunately, the Advisory Committee, having taught us to be skeptical of low scale tunnel test results, cannot help us to reassure ourselves as to the merits of airfoils not tested at high value of the Reynold's Number. Obviously, it would be impractical, and perhaps a grave misdirection of government funds, for the Langley Field laboratory to undertake to test every airfoil presented to it.

"Hence, if low scale tests are not indicative of comparative merit, and since high scale tests are unattainable, and as the mathematics have not yet been developed for the precise prediction of practical airfoil performance without supporting experimentation, it may be that we must, for a while forget about wind tunnels, for this particular purpose, and, as each new design problem arises, design an airfoil as we think it should be to best meet the requirements of the particular case;—build our wings accordingly, and hope for the best in full flight results.

"With this in mind, an 'adjustable' airfoil section, upon

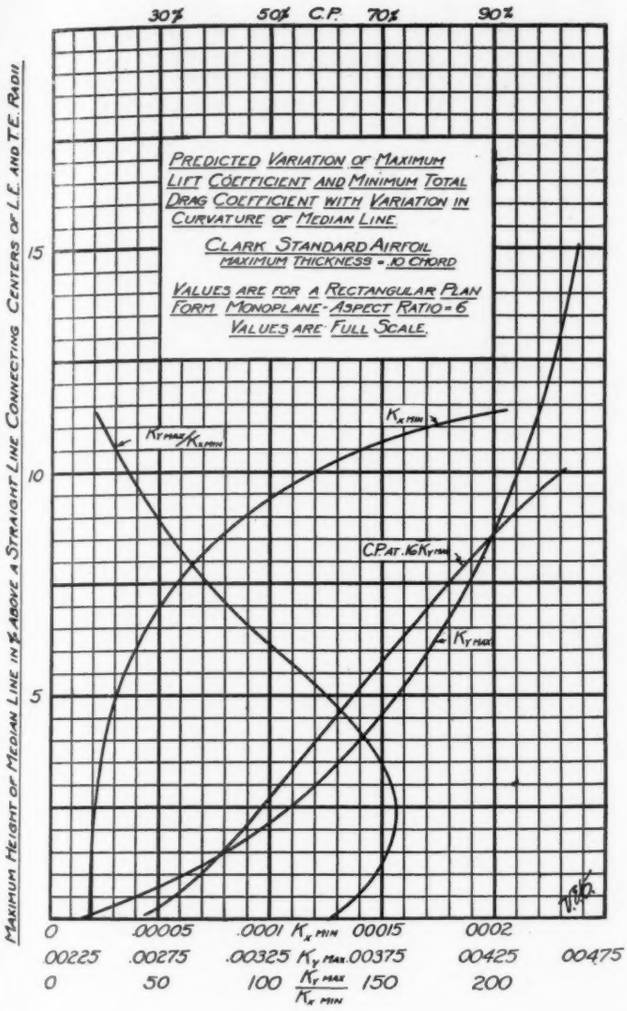


Fig. 3.

which you have the data, has been laid down. By manipulation of this basic section,—changing thickness or curvature of median line, or both, according to the methods outlined,—an indefinite number of sections may be obtained, which are affinal. Airfoils tapered in plan, or in thickness ratio, or both, may also be constructed and their characteristics predicted. The thickness may be changed to meet structural demands (wing beam depth, etc.) and the curvature of median line varied to obtain Maximum Lift Coefficient or Minimum Drag Coefficient to meet the 'performance' requirements of a particular design problem. These latter two important characteristics,—important not only of themselves,—but also because they usually constitute an index of merit for all-around applicability—have been 'predicted'. It takes a deal of temerity to venture such 'predictions', but, after all, for the reasons stated, these predictions of full scale characteristics probably will neither be confirmed nor contradicted. If they are no more inaccurate for the purpose of full flight performance calculations than low scale tunnel tests, as judged

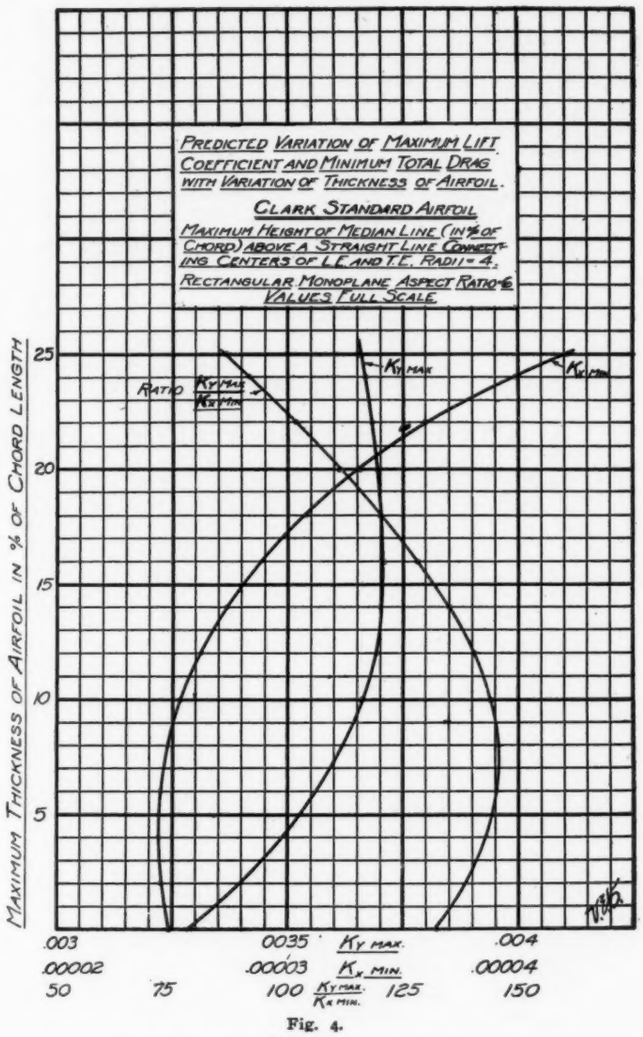


Fig. 4.

by the National Advisory Committee tests, the adjustable airfoil series may be useful.

"The layout data for the basic section are given in Tables I and II.

"The layout method is shown by Fig. 2. A straight 'base' line is first drawn with the desired chord length. Perpendicu-

TABLE I

Ordinates of Median Line. For Maximum Displacement .0400 Chord Length

Distance from Leading Edge expressed in Terms of Chord Length	.025	.05	.075	.10	.15	.20	.30	.40	.50	.60	.70	.80	.90
Ordinates of Median Line in Terms of Chord Length	.00224	.00911	.01491	.01951	.02671	.03183	.03760	.03995	.03872	.03471	.02877	.02086	.01114

Ordinates at Leading and Trailing Edges are 0

TABLE II

Half-thickness Ordinates. For Maximum Thickness .10 Chord Length

Distance from L.E. in terms of Chord	.025	.05	.075	.10	.15	.20	.30	.40	.50	.60	.70	.80	.90	1.00
Half-thickness in terms of Chord	.02191	.03016	.03582	.03996	.04539	.04856	.04985	.04722	.04236	.03593	.02836	.01988	.01077	.00119

lars to this line are erected at the stations indicated in Table I and the curved median line plotted and drawn. Then straight lines are drawn, in each case perpendicular to the median line at its point of intersection with the 'base' ordinate line, and the contour of the section plotted from Table II and drawn.

"If a higher maximum lift coefficient than that for the basic section is desired, at the sacrifice of drag and center-of-pressure travel, the ordinates from Table I are multiplied by a *constant* factor greater than unity, to give the desired characteristics 'predicted' in the chart, Fig. 3. Conversely, if low drag or center-of-pressure travel is more important than high lift for the particular case, the constant factor may be less than unity.

"If deeper spars than may be contained within the basic section are required for strength and rigidity, at the sacrifice of drag, the ordinates from Table II are multiplied by a *constant* factor greater than unity, a 'fatter' section drawn around the median line selected, and its characteristics predicted from Fig. 4.

"The combinations of camber and thickness are infinite."

Stearman Aircraft, Inc., Moves Its Factory to Wichita, Kan.

IN ORDER that a more central distribution point be available from which to transport Stearman airplanes to the many localities in which the product will be sold, Stearman Aircraft, Inc., of Venice, Calif., has moved its general offices and factory to Wichita, Kan. For the past year the "Stearman C-2", a three place private owner or light commercial airplane applicable to the use of the OX-5, Hisso or Whirlwind power plants has been manufactured in Southern California.

Practically the entire organization and equipment situated there has been transplanted to the central states location. Lloyd Stearman, designer of a number of very successful commercial airplanes, will continue as general manager and designer. Fred D. Hoyt, a familiar figure in West Coast flying circles, is the sales manager. "Mac" Short, formerly of the Aeronautical Department, Mass. Institute of Technology, is chief engineer. The factory, measuring 80 ft. x 250 ft., provides 20,000 sq. ft. of floor space and with the manufacturing facilities available an excellent production program has been inaugurated. This together with an adequate financial background will assure the flying public of the continuation of production of the craft which has gained much favor on the western slope. It is to be understood that the same general design and superior quality of workmanship will persist in the new factory thus serving a definite field for the airplane purchasing public.

Report on Model Wing Tests

THE NATIONAL ADVISORY COMMITTEE for Aeronautics has announced the publication of Report No. 269 entitled "Air Force Tests of Sperry Messenger Model with Six Sets of Wings" by James M. Shoemaker. This test had a twofold purpose; to test the model with six well known airfoils, the R.A.F. 15, U.S.A. 5, U.S.A. 27, U.S.A. 35-B, Clark Y, and Gottingen 387 in the N.A.C.A. variable density wind tunnel at full scale Reynolds Number; to determine the scale effect of the model equipped with all the details of the actual airplane. It was found that by increasing the Reynolds Number from about 1/20 scale to full scale there was a large decrease in the minimum drag coefficient. For all the airfoils, except the Gottingen 387, the maximum lift coefficient was increased with increasing scale. The results of these tests and those obtained from tests in this tunnel on the airfoils alone are compared.

Copies of this report may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

Western Air Express Awarded Cheyenne-Pueblo Mail Contract

THE WESTERN AIR EXPRESS of Los Angeles, Calif., has been awarded the contract for carrying mail by air between Cheyenne, Wyo., and Pueblo, Col., via Denver and Colorado Springs, it was announced by Postmaster General New shortly after bids for this route had been opened.

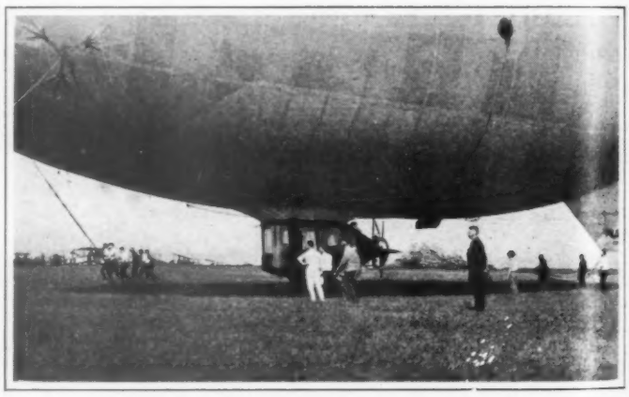
The Western Air Express was low bidder at $.83 per lb. It is a going concern, the Postmaster General announced, as the contractor on the Los Angeles-Salt Lake City air mail route and is paying dividends on its stock. There is no occasion for delay for purposes of investigation.

Nine bidders contested for the contract which was thrown open to competition following the cancellation of the contract of the Colorado Airways, Inc., operators of the line for the past year.

The second low bidder was the Continental Airways Express of Denver, at $1.35 a pound, with Curtiss Standard planes. Other bids were: Boeing Air Transport, Inc., Seattle; Boeing mail planes; $1.50. Robertson Aircraft Co., St. Louis; Douglas planes; $1.97. Pikes Peak Air Service Co., Colorado Springs; Travel Air; $1.64. Rocky Mountain Air Lines, Denver; Stinson-Detroiter; $1.85. Midland Air Express, Denver; Fairchild; $2.75. Walter T. Varney, San Francisco; Stearman; $1.94; and Colorado Airways, Denver; Lincoln Standard and Ryan; $2.49.

Flying Broadcasting Station

IN A recent test, the "Pilgrim", the world's smallest dirigible, became a flying broadcasting station when a short wave transmitting station was installed aboard and Graham McNamee, famous radio announcer, described his flight over the city of Akron, O. Mr. McNamee used a portable transmitting set operating on 70 meters; the signals were picked up by broadcasting station WADC at Akron and re-transmitted on 390 meters. It is claimed that this is the first time that radio broadcasting from a dirigible has been accomplished.



The "Pilgrim", smallest dirigible in the world.

The Pilgrim, owned by the Goodyear Tire and Rubber Co., Akron, O., has a gas capacity of 110,000 cu. ft. It is now filled with helium and powered with a three cylinder radial Wright engine developing 60 hp.

Houston Airways, Inc., Formed

ANNOUNCEMENT IS made of the recent establishment of Houston Airways, Inc., Houston, Tex. The company is engaged in the operation of a commercial flying business that includes aerial photography and mapping, joy rides, cross country trips, student instruction and aerial advertising.

The officers of the company are, Joseph Glass, president, Dr. Frank J. Iiams, vice-president, G. L. Loomis, vice-president, and C. M. Drayton, secretary-treasurer.

Official World and American Air Records

Established under the Rules and Regulations of the Federation Aeronautique Internationale
Translated and Compiled by the Contest Committee, National Aeronautic Association, Washington, D. C.

August 1, 1927.

CLASS A—BALLOONS

GRAND "FREE FOR ALL" RECORD

WORLD RECORDS Confirmed by F.A.I.	AMERICAN RECORDS Confirmed by Contest Committee, N.A.A.
Duration (Germany) H. Kaulen, Dec. 13-17, 1913 87 hr.	Duration C. B. Harmon, St. Louis to Edina, Mo. Oct. 4, 1909 48 hr. 26 min.
Distance (Germany) Berliner, Feb. 8-10, 1914 3052.7 km. 81896.9 mi.	Distance A. R. Hawley, St. Louis to Lake Tschotogama, Oct. 17-19, 1910 1887.6 km. 1172.9 mi.
Altitude (Germany) Suring and Berson, June 30, 1901 10,800 m. 35,424 ft.	Altitude (F.A.I. Homologation pending) Capt. Hawthorne C. Gray, at Scott Field, Belleville, Ill., May 4, 1927 12,944 m. 42,470 ft.
1st Category (600 cu. m.)	
Duration (France) G. Cormier, Aug. 10-11, 1924 22 hr. 34 min.	Duration (No Record)
Distance (France) Georges Cormier, July 1, 1922 804.173 km. 499.69 mi.	Distance (No Record)
Altitude (No Record)	Altitude (No Record)
2nd Category (601-900 cu. m.)	
Duration (France) Jules Dubois, May 14-15, 1922 23 hr. 28 min.	Duration W. C. Naylor and K. W. Warren, "Skylark", Little Rock, Ark. to Crawford, Tenn. April 29-30, 1926 19 hr.
Distance (France) Georges Cormier, July 1, 1922 804.173 km. 499.69 mi.	Distance W. C. Naylor and K. W. Warren, "Skylark", Little Rock Ark. to Crawford, Tenn. April 29-30, 1926 660 km. 410 mi.
Altitude (No Record)	Altitude (No Record)
3rd Category (901-1200 cu. m.)	
Duration (France) Jules Dubois, May 14-15, 1922 23 hr. 28 min.	Duration W. C. Naylor and K. W. Warren, "Skylark", Little Rock Ark., to Crawford, Tenn., April 29-30, 1926 19 hr.
Distance (France) Georges Cormier, July 1, 1922 804.173 km. 499.69 mi.	Distance W. C. Naylor and K. W. Warren, "Skylark", Little Rock, Ark., to Crawford, Tenn., April 29-30, 1926 660 km. 410 mi.
Altitude (No Record)	Altitude (No Record)
4th Category (1201-1600 m.)	
(No Record)	(No Record)
5th Category (1601-2200 m.)	
(No Record)	(No Record)
6th Category (2201-300 cu. m.)	
Duration (No Record)	Duration (No Record)
Distance (No Record)	Distance (No Record)
Altitude (United States) Capt. Hawthorne C. Gray, at Scott Field, Belleville, Ill., March 9, 1927. 8690 m. 28,510 ft.	Altitude Capt. Hawthorne C. Gray, at Scott Field, Belleville, Ill., March 9, 1927. 8,690 m. 28,510 ft.
7th Category (3001-4000 cu. m.)	
Duration (No Record)	Duration (No Record)
Distance (No Record)	Distance (No Record)
Altitude (United States) Capt. Hawthorne C. Gray, at Scott Field, Belleville, Ill., March 9, 1927. 8,690 m. 28,510 ft.	Altitude Capt. Hawthorne C. Gray, at Scott Field, Belleville, Ill., March 9, 1927. 8,690 m. 28,510 ft.
8th Category (4001-5000 cu. m.)	
Duration (No Record)	Duration (No Record)
Distance (No Record)	Distance (No Record)
Altitude (United States) Capt. Hawthorne C. Gray, at Scott Field, Belleville, Ill., March 9, 1927. 8,690 m. 28,510 ft.	Altitude Capt. Hawthorne C. Gray, at Scott Field, Belleville, Ill., March 9, 1927. 8,690 m. 28,510 ft.

CLASS B—AIRSHIPS

Returning to Point of Departure

WORLD RECORDS	AMERICAN RECORDS
Duration (Italy) Castracane and Castruccio P-5. June 25, 1913. 15 hr.	Duration Ens. Maytham, Navy A-236, at Miami, Fla. Dec. 24-26, 1918. 40 hr. 26 min.
Distance (Italy) Castracane and Castruccio P-5, July 30, 1913. 810 km. 503.3 mi.	Distance (No Record)
Altitude (France) Cohen, af Conte, June 18, 1912 3080 m. 10,102 ft.	Altitude (No Record)
Maximum Speed (Italy) Castracane and Castruccio, P-5, July 30, 1913, 64.8 k.p.h. 40.26 m.p.h.	Maximum Speed (No Record)

CLASS C—AIRPLANES

Returning to Point of Departure without Refueling

WORLD RECORDS	AMERICAN RECORDS
Duration (United States) Clarence D. Chamberlin and Bertrand B. Acosta, Bellanca Monoplane, Wright J-5, 200 hp., at Roosevelt Field, L. I., N. Y., April 12-13-14, 1927 51 hr. 11 min. 25 sec.	Duration Clarence D. Chamberlin and Bertrand B. Acosta, Bellanca monoplane, Wright J-5, 200 hp., at Roosevelt Field, L. I., N. Y., April 12-13-14, 1927 51 hr. 11 min. 25 sec.
Distance (France) Drouhin and Landry, Farman biplane, Farman 450 hp., at Etampes-Chartes, Aug. 7-8-9, 1925 4400 km. 2734 mi.	Distance Lts. Kelly and Macready, USA, T-2, Liberty 375 hp., at Wilbur Wright Field, Dayton, O., April 16-17, 1923. 4050 km. 2516.55 mi.
Distance (Airline) United States Chas. A. Lindbergh, Ryan monoplane, Wright "Whirlwind" 200 hp., New York-Paris, May 20-21, 1927. 5890 km. 3,610 mi.	Distance (Airline) Clarence D. Chamberlin, Wright Bellanca, Wright J-5, 200 hp., Roosevelt Field to Isleben, Germany, June 4-5-6, 1927 6294 km. 3,911 mi. F.A.I. Homologation as World Record pending.
Altitude (France) Callizo, Bleroit-Spad biplane Lorraine 450 hp. Rateau supercharger, at Buc, Aug. 23, 1926. 12,442 m. 40,820 ft.	Altitude Lt. J. A. Macready, USAS, Co-5, biplane, Liberty, 400 hp., (Supercharger) at McCook Field, Dayton, Ohio, Jan. 29, 1926. 11,797 m. 38,704 ft.
Maximum Speed (France) Warrant Officer Bonnett, Ferbois monoplane, Hispano Suiza, 550 hp. at Istres, France, Dec. 11, 1924. 448.171 k.p.h. 278.480 m.p.h.	Maximum Speed Lt. A. J. Williams, USN., Curtiss Racer, R-2C1, Curtiss D-12a, 500 hp., at Mitchel Field, Mineola, L. I., N. Y., Nov. 4, 1913 429.025 k.p.h. 266.59 m.p.h.

SPEED FOR SPECIFIED DISTANCES
Without Pay Load

Speed for 100 km. (United States) Lt. Cyrus Bettis, USAS., Curtiss R3C-1, Curtiss V 1400, 600 hp., Mitchel Field, N. Y., Oct 12, 1925 401.279 k.p.h. 249.342 m.p.h.	Speed for 100 km. Lt. Cyrus Bettis, USAS, Curtiss R3C-1, Curtiss V 1400, 600 hp., Mitchel Field, N. Y., Oct. 12, 1925. 401.279 k.p.h. 249.342 m.p.h.
Speed for 500 km. (France) Sadi-Lecointe, Nieuport-Delage, Hispano-Suiza, 500 hp. at Istres, June 23, 1924 306.696 k.p.h. 190.567 m.p.h.	Speed for 500 km. Lt. Alex Pearson, USA., Verville Sperry R-3, Wright 350 hp., at Wilbur Wright Field, Dayton, O., March 29, 1923. 270.06 k.p.h 167.80 m.p.h.
Speed for 1000 km. (France) Fernand Lasne, Nieuport-Delage 42C-1, Hispano-Suiza 500 hp., Villesauvage-La Marmogne, Aug. 29, 1925 248.292 k.p.h 154.292 m.p.h.	Speed for 1000 km. Lt. Harold R. Harris, USA., and Ralph Lockwood, DH-4L Liberty 400 hp., at Wilbur Wright Field, Dayton, O., March 29, 1923 205.06 k.p.h. 127.42 m.p.h.
Speed for 2000 km. (France) Fernand Lasne, Nieuport-Delage 42C-1, Hispano-Suiza, 500 hp., Villesauvage-La Marmogne, Sept. 12, 1925 218.759 k.p.h. 135.930 m.p.h.	Speed for 2000 km. Lt. Harold R. Harris, USA., DH-4L Liberty, 375 hp., at Wilbur Wright Field, Dayton, O., April 17, 1923 183.83 k.p.h. 114.22 m.p.h.

CLASS C—WITH USEFUL LOAD OF 500 KILOGRAMS (1102.31 lb.)

Returning to Point of Departure

World Records	American Records
Duration (Germany) M. K. Schnabele and Fritz Loose, Junkers W-35, Junkers L-5 engine, 320 hp., at Dessau, March 21-22, 1927, 22 hr. 11 min. 45 sec.	**Duration** Lt. H. R. Harris, USAS., Douglas DT-2, Liberty 400 hp., at Wilbur Wright Field, Dayton, O., June 28, 1924. 9 hr. 11 min. 53.4 sec.
Distance (Germany) M. L. Schnabele and Fritz Loose, Junkers W-35, Junkers L-5 engine, 320 hp., at Dessau, March 21-22, 1927 2735.586 km. 1,699-.81 mi.	**Distance** Lt. H. R. Harris, USAS, Douglas DT-2, Liberty 400 hp., at Wilbur Wright Field, Dayton O., June 28, 1924. 950 km. 590.3 mi.
Altitude (United States) Lt. H. R. Harris, USAS., US Army, TP-1, Liberty 400 hp., at McCook Field, Dayton, O., May 21, 1924 8578 m. 28,143 ft.	**Altitude** Lt. H. R. Harris, USAS, US Army, TP-1, Liberty 400 hp., at McCook Field, Dayton, O., May 21, 1924. 8578 m. 28.143 ft.
Speed for 100 km. (France) Fernand Lasne, Nieuport-Delage, Hispano-Suiza, 500 hp., at Villesauvage-LaMarmogne, Oct. 7, 1925 281.030 k.p.h. 174.622 m.p.h.	**Speed for 100 km.** R. Lockwood, Army CO-5, Liberty 400 hp., at Wilbur Wright Field, Dayton O., June 28, 1924. 180.805 k.p.h. 112.346 m.p.h.
Speed for 500 km. (France) Fernand Lasne, Nieuport-Delage, 42C-1, Hispano-Suiza 500 hp., Villesauvage-LaMarmogne, Oct. 7, 1925 249.618 k.p.h. 155.105 m.p.h.	**Speed for 500 km.** Louis G. Meister, Martin Bomber, MB-2, 2 Liberty 400 hp., at Wilbur Wright Field, Dayton, O., June 28, 1924. 120.55 k.p.h. 74.90 m.p.h.
Speed for 1000 km. (France) Fernand Lasne, Nieuport-Delage Type 42, Hispano-Suiza, 500 hp., at Etampes, May 14, 1926 236.028 k.p.h. 146.660 m.p.h.	**Speed for 1000 km.** (No Record)
Speed for 2000 km. Lionel de Marmier, Potez 28, Farman, 500 hp., Mondesir-Parcay La Martinerie-Mesores, May 20, 1927 167.733 k.p.h. 104.223 m.p.h.	**Speed for 2000 km.** (No Record)

CLASS C—WITH USEFUL LOAD OF 1000 KILOGRAMS (2204.62 lb.)

Returning to Point of Departure

World Records	American Records
Duration (Germany) Fritz Horn, Junkers G-24, 3 Junkers L-11, 230 hp. ea., at Dessau, April 4, 1927, 14 hr. 23 min. 45 sec.	**Duration** Lt. J. A. Macready, USAS, Curtiss (Martin) Bomber, NBS-1, 2 Liberty 400 hp., at Wilbur Wright Field, Dayton, O., Oct. 2, 1924. 2 hr. 13 min. 49.6 sec.
Distance (France) Lionel de Marmier, Potez 28, Farman 500 hp. at Etampes, May 20, 1927. 2098.2 km. 1242.8 mi.	**Distance** (No Record)
Altitude (France) Lucien Coupet, Breguet, Sesquiplane, Type 19, Farman 500 hp., at Toussus-le-Noble, March 17, 1926. 6540 m. 21,457 ft.	**Altitude** Lt. H. R. Harris, USAS, US Army, TP-1, Liberty 400 hp., at Dayton, O., May 22, 1924. 5100 m. 16,732 ft.
Speed for 100 km. (France) Fernand Lasne, Nieuport-Delage, Hispano-Suiza, 500 hp., at Villesauvage La Marmogne, Oct. 6, 1925. 246.440 k.p.h. 153.130 m.p.h.	**Speed for 100 km.** (No Record)
Speed for 500 km. (Germany) W. Zimmerman Junkers G-24, 3 Junkers 280 hp., at Dessau, June 28, 1927. 209.115 k.p.h. 129.937 m.p.h.	**Speed for 500 km.** (No Record)
Speed for 1000 km. (Germany) W. Zimmerman Junkers G-24, 3 Junkers 280 hp., at Dessau, June 28, 1927. 208.738 k.p.h. 129.702 m.p.h.	**Speed for 1000 km.** (No Record)
Speed for 2000 km. (France) L. de Marmier, Potez 28, Farman 500 hp., at Etampes, June 20, 1927. 167.733 k.p.h. 104.223 m.p.h.	**Speed for 2000 km.** (No Record)

CLASS C—WITH USEFUL LOAD OF 2000 KILOGRAMS (4409.24 lb.)

Returning to Point of Departure

World Records	American Records
Duration (Germany) J. Risticz, Junkers G-24, 3 Junkers, 280 hp., at Dessau, June 29, 1927. 13 hr. 1 min. 12.8 sec.	**Duration** Lt. H. R. Harris, USAS, and Mechanician Doug. Culver, Barling Bomber, 6 Liberty 400 hp., at Wilbur Wright Field, Dayton, O., Oct. 3, 1924. 1 hr. 47 min. 10.5 sec.
Distance (Germany) J. Risctics, Junkers G-24, 3 Junkers, 280 hp., at Dessau, June 29, 1927. 1621.088 km. 1007.293 mi.	**Distance** (No Record)

World Records	American Records
Altitude (Italy) Demenico Antonini, Caproni, CA 73, 2 Isotta Fraschini, 500 hp. ea., at Cascina Malpensa, May 26, 1927. 6262 m. 20,544 ft.	**Altitude** Lt. H. R. Harris, USAS, Barling Bomber, 6 Liberty, 400 hp., at Wilbur Wright Field, Dayton, O., Oct. 25, 1923. 2049 m. 6,722 ft.
Speed for 100 km. (Germany) W. Zimmerman, Junkers G-24 3 Junkers L-5, 280 hp. ea., at Dessau, June 28, 1927. 209.115 k.p.h. 129.937 m.p.h	**Speed for 100 km.** (No Record)
Speed for 500 km. (Germany) W. Zimmerman, Junkers G-24 3 Junkers L-5, 280 hp., ea., at Dessau, June 28, 1927. 209.115 k.p.h. 129.937 m.p.h.	**Speed for 500 km.** (No Record)
Speed for 1000 km. (Germany) W. Zimmerman, Junkers G-24 3 Junkers L-5, 280 hp. ea., at Dessau, June 28, 1927. 208.738 k.p.h. 129.702 m.p.h.	**Speed for 1000 km.** (No Record)

CLASS C—WITH USEFUL LOAD of 5000 KILO GRAMS (1102.3 lb.)

Returning to Point of Departure

World Records	American Records
Duration (France) L. Bossoutrot, super Farman-Goliath, 4 Farman 500 hp. ea., at Le Bourget, Nov. 16, 1925. 1 hr. 12 min. 21 sec.	**Duration** (No Record)
Altitude (France) L. Bossoutrot, super Farman-Goliath, 4 Farman 500 hp. ea., at Le Bourget, Nov. 16, 1925. 3586 m. 11,765 ft	**Altitude** (No Record)

CLASS C—GREATEST PAY LOAD CARRIED TO AN ALTITUDE OF 2,000 METERS (6671.7 ft.)

World Records	American Records
L. Bossoutrot, super Farman-Goliath, 4 Farman 500 hp. ea., at Le Bourget, Nov. 16, 1925. 6000 kg. 13,228 lb.	Lt. H. R. Harris, USAS, Barling Bomber, 6 Liberty 400 hp. ea., at Wilbur Wright Field, Dayton, O., Oct. 25, 1923. 2000 kg. 4409 lb.

CLASS C—REFUELING IN FLIGHT

Returning to Point of Departure.

World Records	American Records
Duration (United States) Lts. Smith and Richter, USA., DH-4B, Liberty 400 hp., at Rockwell Field, San Diego, Cal., Aug. 27-28, 1923. 37 hr. 15 min. 14.8 sec.	**Duration** Lts. Smith and Richter USA., DH-4B, Liberty 400 hp., at Rockwell Field, San Diego, Calif., Aug. 27-28, 1923. 37 hr. 15 min. 14.8 sec.
Distance (United States) Lts. Smith and Richter, USA., DH-4B, Liberty 400 hp., at Rockwell Field, San Diego, Cal. Aug. 27-28, 1923. 5300 km. 3293.26 mi.	**Distance** Lts. Smith and Richter, USA., DH-4B, Liberty 400 hp., at Rockwell Field, San Diego, Cal Aug. 27-28, 1923. 5300 km. 3293.26 mi.

RECORDS FOR LIGHT AIRPLANES
CLASS C 1st Category

Two seaters weight empty less than 400 kg.

World Records	American Records
Distance (Closed Circuit) (No Record)	**Distance (Closed Circuit)** (No Record)
Distance (Airline) (No Record)	**Distance (Airline)** (No Record)
Altitude (No Record)	**Altitude** (No Record)
Speed for 100 km. (No Record)	**Speed for 100 km.** (No Record)

LIGHT AIRPLANES
CLASS C 2nd CATEGORY

Single seaters weight empty less than 200 kg.

World Records	American Records
Distance (Closed Circuit) (No Record)	**Distance (Closed Circuit)** (No Record)
Distance (Airline) (No Record)	**Distance (Airline)** (No Record)
Altitude (No Record)	**Altitude** (No Record)
Speed for 100 km. (No Record)	**Speed for 100 km.** (No Record)

LIGHT AIRPLANES
CLASS C 3rd CATEGORY

Single seaters weight empty 200-400 kg., inc.

World Records	American Records
Distance (Closed Circuit) (No Record)	**Distance (Closed Circuit)** (No Record)
Distance (Airline) France Lt. Thoret, Caudron monoplane Salmson 40 hp., Le Bourget, Templehof, May 18-19, 1927. 868 km. 539 mi.	**Distance (Airline)** (No Record)
Altitude (France) M. Albert, Albert TE-1 monoplane Salmson 40 hp., at Orley, June 20, 1927. 5585 m. 18,159 ft.	**Altitude** (No Record)

World Records	American Records
Speed for 100 km. (France) M. Magnard, Albert TE-1 monoplane, Salmson 40 hp., at Orley, June 19, 1927. 151.821 k.p.h. 94.326 m.p.h.	Speed for 100 km. (No Record)

CLASS C³—SEAPLANES

Returning to Point of Departure without Refueling

Duration (United States) Lts. C. H. Schildhauer and J. R. Kyle, USN, US Navy PN-9, 2 Packard 500 hp., at Philadelphia, Pa.., May 1-2, 1925. 28 hr. 35 min. 27 sec.	Duration Lts. C. H. Schildhauer and J. R. Kyle, USN, US Navy PN-9 2 Packard 500 hp., at Philadelphia, Pa., May 1-2, 1925, 28 hr. 35 min. 27 sec.
Distance (Germany) F. Loose, Junkers, W-33, Junkers, 320 hp., at Aiken-S-Elbe, March 29, 1927. 1702.8 km. 1053.574 mi.	Distance Lts. F. W. Wead and J. D. Price, Navy CS-2, seaplane, Wright 585 hp., at Washington, D. C., July 11-12, 1924. 1600 km. 994.19 mi.
Distance (Airline) United States Comdr. John Rodgers, USN, and Lt. Byron Connell, PN-9, 2 Packard 1-A, 1500, 500 hp. ea., San Pablo Bay, Cal., to near Hawaii, Aug. 31-Sept. 1, 1925. 2963 km. 1841 Statute mi.	Distance (Airline) Comdr. John Rodgers, USN, and Lt. Byron Connell, PN-9, 2 Packard 1-A-1500, 500 hp. ea., San Pablo Bay, Cal., to near Hawaii, Aug. 31-Sept. 1, 1925. 2963 km. 1842 Statute mi.
Altitude (France) Lt. Vaisseau Demougeot, Loire Gourdon-Leseurrs 32C-1, Jupiter Gnome 520 hp., at Sartrouville, March 28, 1927. 9290 m. 30,479 ft.	Altitude Lt. C. C. Champion, USN, Wright "Apache", Pratt and Whitney Wasp supercharged, 425 hp., at Anacostia, D. C., July 4, 1927. 11581 m. 37,995 ft. F.A.I. Homologation as World Record pending.
Maximum Speed (United States) Major Mario de Bernardi, Macchi S39, Fiat 800 hp., at Hampton Roads, Norfolk, Va., Nov. 17, 1926. 416.618 k.p.h. 258.873 m.p.h.	Maximum Straightaway Speed Lt. James H. Doolittle, USAS, Curtiss R3C-2, Curtiss V 1400 600 hp., Bay Shore, Baltimore, Md., Oct. 27, 1925. 395.439 k.p.h. 245.713 m.p.h.
SPEED FOR SPECIFIED DISTANCES	SPEED FOR SPECIFIED DISTANCES
Speed for 100 km. (United States) Maj. Mario de Bernardi, Macchi S 39, Fiat, 800 hp., at Hampton Roads, Norfolk, Va., Nov. 17, 1926. 399.423 k.p.h. 248.198 m.p.h.	Speed for 100 km. Lt. James H. Doolittle, USAS, Curtiss R3C-2, Curtiss V 1400 600 hp., Bay Shore, Baltimore, Md., Oct. 27, 1925. 377.829 k.p.h. 234.772 m.p.h.
Speed for 500 km. (United States) Lt. R. A. Ofstie, USN. Curtiss Navy C-R, seaplane Curtiss D-12, 450 hp., at Bay Shore, Baltimore, Md., Oct. 25, 1924. 259.328 k.p.h. 161.14 m.p.h.	Speed for 500 km. Lt. R. A. Ofstie, USN, Curtiss Navy C-R, seaplane, Curtiss D-12, 450 hp., at Bay Shore, Baltimore, Md., Oct. 25, 1924. 259.328 k.p.h. 161.14 m.p.h.
Speed for 1000 km. (Germany) George Juterbock, Junkers W-34 Bristol-Jupiter, 420 hp., at Dessau, May 11, 1927. 181.447 k.p.h. 112.695 m.p.h.	Speed for 1000 km. Lt. R. Irvine, Vought "Corsair", Pratt & Whitney "Wasp", 425 hp., at Hampton Roads, Va., May 21, 1927. 210.716 k.p.h. 130.932 m.p.h.

CLASS C³—WITH USEFUL LOAD OF 500 KILOGRAMS (1102.31 lb.)

Returning to Point of Departure

Duration (Germany) Fritz Loose, Junkers W-33 Junkers L.V. 320 hp. at Aiken-S-Elbe, March 29, 1927 14 hr. 8 min. 2 sec.	Duration Lt. H. E. Halland, U.S.N., F-5-L Flying Boat, 2 Liberty 400 hp. at San Diego, Calif. June 6, 1923 7 hr. 35 min. 54 sec.
Distance (Germany) Fritz Loose, Junkers W-33 Junkers L.V., 320 hp. at Aiken-S-Elbe, March 29, 1927 1702.08 km. 1057.6 mi.	Distance Lt. H. E. Halland, U.S.N., F-5-L Flying Boat, 2 Liberty 400 hp. at San Diego, Calif. June 6, 1923 750 km. 466 mi.
Altitude (United States) Lt. Geo. R. Henderson, U.S.N., Vought "Corsair", Pratt & Whitney "Wasp", 425 hp., at Washington, D. C. April 14, 1927 6760 m. 22,178 ft. F.A.I. Homologation as World Record pending.	Altitude Lt. Geo. R. Henderson, U.S.N., Vought "Corsair", Pratt & Whitney "Wasp", 425 hp. at Washington, D. C., April 14, 1927 6760 m. 22,178 ft.
Speed for 100 km. (United States) Lt. S. W. Callaway, U.S.N., Vought "Corsair", Pratt & Whitney "Wasp", 425 hp. at Hampton Roads, Va., April 23, 1927 236.998 k.p.h. 147.263 m.p.h. F.A.I. Homologation as World Record pending.	Speed for 100 km. Lt. S. W. Callaway, U.S.N. Vought "Corsair", Pratt & Whitney, 425 hp. "Wasp" at Hampton Roads, Va., April 23, 1927. 236.998 k.p.h. 147.263 m.p.h.
Speed for 500 km. (Germany) Geo. Juterbock, Junkers W-34 Bristol Jupiter 420 hp. at Dessau, May 11, 1927 194.208 k.p.h. 120.674 m.p.h.	Speed for 500 km. Lt. J. D. Barner, U.S.N., Vought "Corsair", Pratt & Whitney "Wasp", 425 hp., at Hampton Roads, Va. April 30, 1927. 238.908 k.p.h. 136.023 m.p.h.

World Records	American Records
Speed for 1000 km. (Germany) Geo Juterbock, Junkers W-34 Bristol Jupiter, 420 hp., at Dessau, May 11, 1927 181.447 k.p.h. 112.695 m.p.h	Speed for 1000 km. (No Record)

CLASS C³—WITH USEFUL LOAD OF 1000 KILOGRAMS (2204.62 lb.)

Returning to Point of Departure

Duration (Italy) A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini engines 500 hp. ea. at Lac Majeur, Dec. 23, 1926 6 hr. 0 min. 39.4 sec.	Duration Lt. Geo. R. Henderson, U.S.N., PN7-1, flying boat, 2 Wright T-2, 535 hp., at Bay Shore, Baltimore, Md. Oct. 25, 1924. 5 hr. 28 min. 43 sec.
Distance (Italy) A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini engines 500 hp. ea. at Lac Majeur, Dec. 23, 1926 1000 km. 621.3 mi.	Distance Lt. Geo. R. Henderson, U.S.N., PN7-1, flying boat, 2 Wright T-2, 535 hp., at Bay Shore, Baltimore, Md. Oct. 25, 1924. 400 km. 248.55 mi.
Altitude (Italy) M. A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini engines at Vigna di Valle, March 19, 1927 5026 m. 16,489 ft.	Altitude Lt. E. E. Dolecek, U.S.N., F-5-L flying boat, 2 Liberty 400 hp. at San Diego, Calif. June 7, 1923 2432 m. 7,979 ft.
Speed for 100 km. (Germany) John Hisctics, Jurkers W-34 Jupiter 420 hp. at Dessau June 1, 1927 196.078 k.p.h. 121.836 m.p.h.	Speed for 100 km. Lt. Geo. R. Henderson, U.S.N., PN7-1, flying boat, 2 Wright T-2, 535 hp., at Bay Shore, Baltimore, Md. Oct. 25, 1924. 126.345 k.p.h. 78.507 m.p.h.
Speed for 500 km. (Italy) A. Passaleva, Savoia Marchetti S-62, seaplane, 500 hp., Isotta Fraschini, at Sesto Calende (Lac Majeur) Dec. 30, 1926. 190.637 k.p.h. 118.455 m.p.h.	Speed for 500 km. (No Record)
Speed for 1000 km. (Italy) A. Passaleva, Savoia Marchetti S-55, seaplane, 2 Isotta Fraschini, at Sesto Calende (Lac Majeur) Dec. 23, 1926. 166.363 k.p.h. 103.372 m.p.h	Speed for 1000 km. (No Record)

CLASS C³—WITH USEFUL LOAD OF 2000 KILOGRAMS (4409.24 lb.)

Returning to Point of Departure

Duration (Italy) M. A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini 500 hp. at Sesto Calende, Dec. 23, 1926. 6 hr. 0 min. 39.4 sec.	Duration Lt. O. B. Hardison, U.S.N., PN7-2, flying boat, 2 Wright T-2, 535 hp. at Bay Shore, Baltimore, Md., Oct. 25, 1924. 1 hr. 49 min. 11.9 sec.
Distance (Italy) M. A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini 500 hp. at Sesto Calende, Dec. 23, 1926. 1000 km. 621.3 mi.	Distance Lt. O. B. Hardison, U.S.N., PN7-2, flying boat, 2 Wright T-2, 535 hp. at Bay Shore, Baltimore, Md., Oct. 25, 1924. 100 km. 62.137 mi.
Altitude (Italy) A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini, 500 hp. ea. at Sesto Calende (Lac Majeur), Dec. 7, 1926. 3261 m. 10,699 ft.	Altitude Lt. H. E. Halland, U.S.N., F-5-L flying boat, 2 Liberty 400 hp., at San Diego, Cal. June 7, 1923. 1489 m. 4,885 ft.
Speed for 100 km. (Italy) A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini, 500 hp. ea. at Lac Majeur, Oct. 19, 1926. 176.005 k.p.h. 109.361 m.p.h.	Speed for 100 km. Lt. O. B. Hardison, U.S.N., PN7-2, flying boat, 2 Wright T-2, 535 hp. at Bay Shore, Baltimore, Md., Oct. 25, 1924. 110.08 k.p.h. 68.4 m.p.h.
Speed for 500 km. (Italy) A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini, 500 hp. ea. at Lac Majeur, Oct. 19, 1926 173.567 k.p.h. 107.849 m.p.h.	Speed for 500 km. (No Record)
Speed for 1000 km. (Italy) A. Passaleva, Savoia Marchetti S-55, 2 Isotta Fraschini, 500 hp. ea. at Sesto Calende Lac Majeur, Dec. 23, 1926. 166.363 k.p.h. 103.372 m.p.h.	Speed for 1000 km. (No Record)

CLASS C³—SEAPLANES
GREATEST PAY LOAD CARRIED TO AN ALTITUDE OF 2000 METERS (6561.7 ft.)

A. Passaleva, Savoia Marchetti S-55, seaplane, 2 Isotta Fraschini, 500 hp. ea., at Sesto Calende (Lac Majeur), Dec. 8, 1926. 3000 kg. 6614 lb.	Lt. E. E. Bolcek, U.S.N., F-5-L, flying boat, 2 Liberty 400 hp., at San Diego Calif., June 7, 1923. 1000 kg. 2204.6 lb.

(Cont. on page 952)

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Official World and American Air Records

Cont. from page 949

WORLD RECORDS **AMERICAN RECORDS**

RECORDS FOR LIGHT PLANES
CLASS C' (SEAPLANE) 1st CATEGORY

Two seater, weight empty less than 400 kg.

Distance (Closed circuit) (No Record)	Distance (Closed circuit) (No Record)
Distance (Airline) (No Record)	Distance (Airline) (No Record)
Altitude (No Record)	Altitude (No Record)
Speed for 100 km. (No Record)	Speed for 100 km. (No Record)

LIGHT AIRPLANES

2nd Category

Single seaters, weight empty less than 200 kg.

Distance (Closed circuit) (No Record)	Distance (Closed circuit) (No Record)
Distance (Airline) (No Record)	Distance (Airline) (No Record)
Altitude (No Record)	Altitude (No Record)
Speed for 100 km. (No Record)	Speed for 100 km. (No Record)

LIGHT AIRPLANES

3rd Category

Single seaters, weight empty 200-400 kg. inc.

Distance (Closed circuit) (No Record)	Distance (Closed circuit) (No Record)
Distance (Airline) (No Record)	Distance (Airline) (No Record)
Altitude (No Record)	Altitude (No Record)

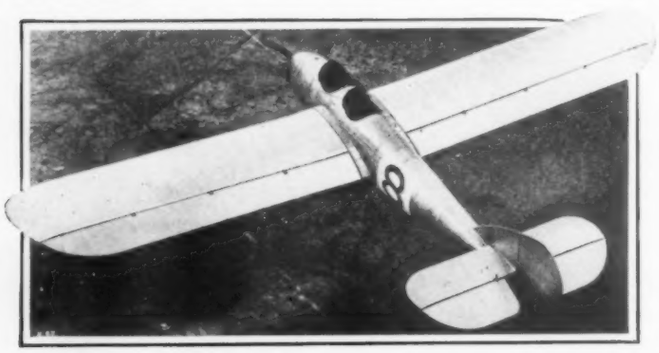
CLASS C²—GLIDERS

Duration (France) Comm'dt. Massaux, Ponceiot Vivette Glider at Vauville, July 26, 1925. 10 hr. 29 min. 43.4 sec.	Duration (No Record)
Distance (Airline) Italy Ettore Cattaneo, GP-1 Glider, at Campo dei Fiori (Varese), Dec. 18, 1926. 10,500 m. 34,449 ft.	Distance (Airline) (No Record)
Altitude (France) E. Descamps, De Woitline Glider, at Biskra, Feb. 7, 1923. 546 m. 1,788 ft.	Altitude (No Record)

CLASS G—HELICOPTERS

Distance (Airline) France Pescara, Pescara Helicopter, 2 propellers, Hispano-Suiza, 180 hp. at Issy-les-Moulineaux, April 18, 1924. 736 m. 2,414 ft.	Distance (Airline) (No Record)

An Aerial Roadster



The "Satellite", a comparatively new English light plane, constructed almost entirely of metal and powered with a Bristol "Cherub" 32 hp. engine. It has a top speed of 70 m.p.h.; lands at 40 m.p.h. and climbs 250 f.p.m.

Aircraft Patents

Copies of patents may be obtained by writing the Patent Office, Washington, D. C., giving the patent number and the name of the inventor. Cost 10c each.

Patent No. 1,633,006—AUXILIARY LIFTING ARRANGEMENT FOR AEROPLANES. James W. Dundas, Detroit, Mich. 4 Claims. In an arrangement of the character described, the combination with an aeroplane having a fuselage and wings attached to said fuselage, of a main casing mounted on the upper side of said fuselage, wing casings on said wings and secured to said main casing, a plurality of gas bags in each of said casings, and a gas line under said bags and connected to them.

Patent No. 1,633,174—LANDING GEAR. Jules Fritsch, Paris, France. 7 Claims. An apparatus of the class described comprising in combination an aeroplane body, a landing chassis, a main landing support associated with said chassis, an auxiliary landing support mounted on said chassis, resilient shock absorbing means associated with said auxiliary landing support, and means associated with said shock absorbing means for limiting the movement thereof relative to said main landing support.

Patent No. 1,633,238—DIRIGIBLE BALLOON. Fred H. Bassett, Washington, D. C. 4 Claims. In a dirigible balloon, a double shell consisting of spaced inner and outer shells, partitions extending across said inner shell adjacent the ends thereof to provide a forward compartment, a central compartment, and a rear compartment, and a tubular backbone forming a tank for compressed levitating gas and extending between said partitions.

Patent No. 1,636,320—AEROPLANE. Carlos Montero, Habana, Cuba. 2 Claims. In a device of the character described, a rotatably mounted sleeve, a plane member normally disposed in a horizontal position intermediate the ends of said sleeve, a hub slidably mounted upon the sleeve and secured thereto, brace members connecting the plane with the sleeve, an annular groove formed in the perimeter of the hub, said plane being formed with a plurality of circumferentially arranged openings, vanes movable in said openings, means forming connection between the hub and vanes for actuating said vanes upon movement of the hub relative to the sleeve, and manually operated means for imparting movement to said hub.

Patent No. 1,636,354—MOORING MAST AND MOORING GEAR FOR LIGHTER-THAN-AIR AIRCRAFT. Charles Denniston Burney, Westminster, London, Eng., assignor to Airship Guarantee Co., Ltd., London, Eng. 9 Claims. A mooring mast for lighter-than-air aircraft, in which anchor points for the side guys or cables which steady the airship as she is being hauled down to the mast are provided on laterally or radially projecting members or girders attached at or towards the top of the mooring mast.

Patent No. 1,638,726—PROPELLING MECHANISM FOR AIR NAVIGATORS. Antonio Chiarelli, New York, N. Y. 6 Claims. In a propelling and manoeuvring system for aircrafts, the combination of an inflated airship body, a plurality of propellers of the drum and paddle type spaced therealong with the planes of propeller rotation tangential to the said body and intersecting each other, certain rotatably adjustable shafts connected to each propeller, and adapted to change the timing of the paddle action, means connected with the shafts for individually adjusting the said shafts, and means connected with the shafts for simultaneously adjusting the shafts.

Patent No. 1,638,840—SAFETY DEVICE FOR AEROPLANES. Arthur E. Fixel, Detroit, Mich. 5 Claims. A parachute comprising a cover, a plurality of elastic ribs therefor secured to said cover and hinged to a common central member in such manner as to permit lateral movement, and spring means associated with the ribs and tending to move them to radial arrangement.

Patent No. 1,638,961—AIRSHIP. Severin Richardsen, Strommen, Norway. 6 Claims. An airship heavier than air, comprising a hull, horizontal and vertical channels through the same, air screws in said channels for supporting and moving the airship, said horizontal channels being flattened at their rear end, and a side rudder between the rear ends of said horizontal channels.

Patent No. 1,639,029—AEROPLANE. William L. Gilmore, Mineola, N. Y., assignor to Curtiss Aeroplane & Motor Co., Inc., Garden City, N. Y. 6 Claims. An aeroplane adapted to land, water and air operation, characterized by the fact that the supporting surface and the float are both permanently set, the former at a positive angle and the latter at a negative angle to the line of thrust whereby, in effecting a slow speed landing, a high lift angle may be accorded the wing.

Patent No. 1,639,553—SUPERPLANE. John Enloe Broyles, Russellville, Mo., assignor of one-half to Henry Emmet Robertson and Theodore Henry Weiler, Russellville, Mo. 2 Claims. A super-plane including, in combination, a fuselage having a nose provided with upwardly and rearwardly inclined top merging into a downward and rearward inclination, and a bottom inclined downwardly and rearwardly and merging into a concavity, supports projecting from the nose and sides of the fuselage, and propeller motor frames mounting on the supports and having vertical and horizontal axes.

Patent No. 1,637,432—LIGHTER-THAN-AIR AIRCRAFT. Barnes Neville Wallis and Charles Denniston Burney, Westminster, London, Eng., assignors to Airship Guarantee Co. Ltd., London, Eng. 1 Claim. An airship comprising a front portion consisting of a semi-prolate ellipsoid approximately 2 diameters long at which distance from the nose the maximum diameter of the airship occurs, and a rear portion which is approximately 2½ or three diameters long measured from the place where it is joined to the front portion, said front portion up to the maximum diameter of the airship being free or substantially free from external protuberances.

Significant !

THE ENGINEERING INDEX

(Registered United States, Great Britain and Canada)

Mechanical Engineering Section

THE ENGINEERING INDEX presents each month, in conveniently classified form, items descriptive of the articles appearing in the current issues of the world's engineering and scientific press of particular interest to mechanical engineers. At the end of the year the monthly instalments are combined along with items dealing with civil, electrical, mining and other branches of engineering, and published in book form, this annual volume having regularly appeared since 1906. In the preparation of the Index by the engineering staff of The American Society of Mechanical Engineers some 1200 technical publications received by the Engineering Societies Library (New York) are regularly reviewed, thus bringing the great resources of that library to the entire engineering profession.

Photoprint copies (white printing on a black background) of any of the articles listed in the Index may be obtained at a price of 25 cents a page. When ordering photoprints identify the article by quoting from the index item: (1) Title of article; (2) Name of periodical in which it appeared; (3) Volume, number, and date of publication of periodical; (4) Page numbers. A remittance of 25 cents a page should accompany the order. Orders should be sent to the Engineering Societies Library, 29 West 39th Street, New York.

AIRPLANE PROPELLERS

Design. Some Notes on the Design of Airscrews, F. S. Barnwell. Instn. Aeronautical Engrs.—Jl., vol. 1, no. 5, May 1927, pp. 56–77 and (discussion) 77–83, 6 figs. Deals with simple blade-element theory; means for determining effect of body on tractor air propeller and effect of air propeller on body; metal propellers.

Geared-Down. Geared Down Propellers and Efficiency of Commercial Airplanes, R. M. Mock. Aviation, vol. 22, no. 22, May 30, 1927, pp. 1137–1140. Better performance attained in spite of increased weight.

Metal. Metal Propeller Development, E. G. McCauley. Aviation, vol. 22, no. 22, May 30, 1927, pp. 1127–1130 and 1144, 10 figs. Extensive test work responsible for present efficiency of metal propellers for aircraft use; detachable blade; composition of aluminum alloy.

Sections. Characteristics of Propeller Sections Tested in the Variable Density Wind Tunnel, E. N. Jacobs. Nat. Advisory Committee for Aeronautics—Report, no. 259, 1927, 16 pp., 18 figs. Results obtained, besides providing data for design of propellers, should be of special interest because of opportunity afforded for study of scale effect on family of airfoil sections having different thickness ratios.

AIRPLANES

American. The Aircraft Industry at Bolling Field. Aviation, vol. 22, no. 20, May 16, 1927, pp. 1033–1038, 7 figs. 65 aircraft manufacturers exhibit at all-American aircraft display; review of exhibits indicates progressive state of industry; aircraft manufacturers.

American Eagle. The American Eagle Commercial Plane. Aviation, vol. 22, no. 23, June 6, 1927, p. 1240, 2 figs. Outstanding design that involves several individual and distinct features which reduce maintenance; direct steel-tubing aileron control is positive, control wires, pulleys and accompanying friction being wholly eliminated; tail skid can be removed to re-wrap shock cord by removing two bolts which are easily accessible.

Bach. The Bach C-S-1 Cabin Plane. Aviation, vol. 22, no. 22, May 30, 1927, p. 1135. Three-passenger enclosed-cabin machine designed for private owner; simplicity and ruggedness are features; powered by 120-hp. super Rhone radial air-cooled engine.

Bellanca. The History of the Columbia. Aviation, vol. 22, no. 26, June 27, 1927, pp. 1430–1431, 2 figs. Facts and figures on construction, performance and records of the New York-to-Germany plane.

Bonney Seagull. Bird-Like Design Features Bonney "Seagull." Aviation, vol. 22, no. 24, June 13, 1927, pp. 1290–1291, 3 figs. By reproducing same aerodynamic characteristics as those of gull, L. W. Bonney expects to give his plane similar performance; independent movement of wing sections; entire wing of duralumin; dual side-by-side control.

Canadian Industry. The Canadian Aircraft Industry. Aeroplane, vol. 32, no. 19, May 11, 1927, pp. 534, 543–544, 546 and 548, 5 figs. Types of planes developed in Canada.

Chance Vought. Chance Vought Products Maintain High Standard of Quality and Performance. Aviation, vol. 22, no. 24, June 13, 1927, pp. 1278–1279. From original VE-7 model to new "Corsair" which holds four world's records, soundness of design has been governing factor; Corsair is designed around

THE ENGINEERING INDEX appearing in the August 1927 issue of Mechanical Engineering, a monthly journal published by the American Society of Mechanical Engineers, described 56 articles pertaining to aircraft, aeronautics, etc. The articles were from "the current issues of world's engineering and scientific press." Below is an analysis of their origin:

AVIATION	24
Other American aeronautical publications	0
Foreign	20
Bulletins of N.A.C.A., etc.	5
American Publications other than aeronautical	7
Total	56

43% of all the articles pertaining to aircraft, aeronautics, etc., were from AVIATION.

67% of all these articles published in America were from AVIATION.

100% of these articles taken from the American aeronautical press came from AVIATION, or in other words, no other American paper dealing with aeronautics contained articles described in The Engineering Index.

The above example is significant. It is just another indication that AVIATION is the American authority dealing with the design, construction and operation of aircraft.

AVIATION is the only American aeronautical publication written exclusively for those in the aeronautical industry, and others seriously interested in aircraft and their operation.

Aviation Publishing Corporation, 250 West 57th Street, New York City.

AVIATION

The Oldest Aeronautical Magazine

Aircraft Trade Notes

Von Hoffmann Aircraft Co. to Distribute B. F. Mahoney Planes

THE VON HOFFMANN AIRCRAFT CO. of St. Louis, Mo., is now distributor for the B. F. Mahoney Corp. aircraft in that territory. One of the Ryan Broughams has already been sold to a resident of St. Louis. The Brougham is the same plane that Colonel Lindbergh flew, adapted to passenger carrying and is now made by the B. F. Mahoney Aircraft Corp.

The Von Hoffmann Aircraft Co. was formed last summer by A. Von Hoffmann and B. Von Hoffmann, who are internationally known balloonists, and Milton Girton, who is pilot of many years' experience. In addition to the above the personnel of the company includes John Campion, a wartime pilot, "Red" Jackson, Ade Kennard, and J. Stahl. In addition to being distributors for Mahoney aircraft the company conducts an aerial taxi business, carries passengers on pleasure rides, does aerial photography and conducts a flying school.

The student receives a minimum of 15 hr. in the air. If at the end of that time his instructors feel that he has not had enough practice to fly safely and steadily he is given further instruction as a part of his course. In addition to the usual ground work around the hanger a lecture class is held twice a week. At this lecture, which is given at night, motors and their maintenance, nomenclature of the airplane, the function of the different parts, aerial navigation, meteorology, theory of flying, and commercial air regulations are discussed and studied. Quite a few are enrolled for this lecture course who are not taking flying instruction. By admitting to this lecture class interested people who are not taking the flying instruction the Von Hoffmann Company is helping to make St. Louis a little more air-minded and at the same time this school should prove a good recruiting ground for their flying school. In the end the whole industry will benefit of course from increasing the air-mindedness of the public.

The present equipment of the Von Hoffmann Company consists of a Ryan Brougham, a Ryan open cockpit plane with a Hisso engine, an Eaglerock, and another Ryan Brougham has just been received while two more are on order for immediate delivery.

Aircraft Firm Moves to Buffalo

A NEW airplane manufacturing plant for Buffalo, N. Y., is announced by William N. Kessel, industrial commissioner of the Buffalo Chamber of Commerce. The Hall Aluminum Aircraft Corp. has decided to move to that city and will use a portion of the space occupied by the Aluminm Company of America at 2000 Elmwood Ave. and will produce all-metal airplanes.

The Hall company has been operating for some time at Mamaroneck, N. Y., where it has been specializing in all-metal planes for the United States Army and Navy. The company was formerly known as Charles Ward Hall, Inc.

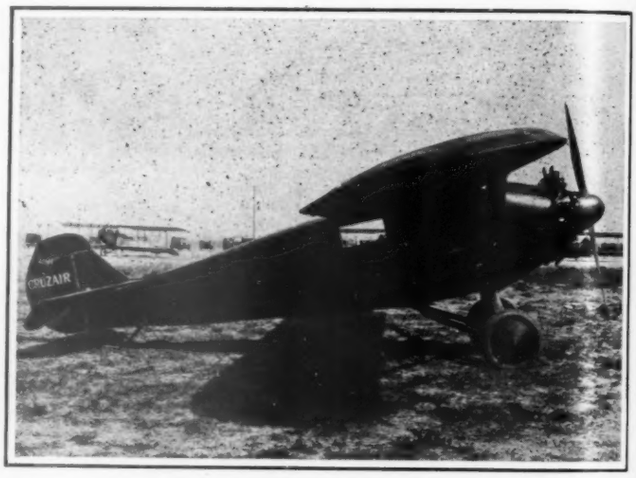
Charles Ward Hall of Larchmont, N. Y., is president and others connected with the firm are Charles G. Pape, New York City and Alexander M. Crane of Scarsdale, N. Y. The Aluminum Company of America at Buffalo and several Buffalo men have become financially interested in the company, some of whom will serve on its board of directors.

The company was influenced in coming to Buffalo by that city's large supply of trained aircraft labor and the interest shown by Buffalo in aviation as evidenced by the construction of the Buffalo airport, one of the finest in the world. The facilities offered by use of space in the buildings occupied by the Aluminum company were a factor also.

The Chamber of Commerce points out that there are now five airplane manufacturing companies in Buffalo, two of them being purely local companies and three having moved to Buffalo after operating in other cities.

Manufactures First Plane

THE RYAN MECHANICS MONOPLANE CO., Los Angeles, Calif., recently completed and tested its first plane, a Waterhouse Cruzair monoplane, using a Wright Whirlwind engine. Incidently it is the same engine that Lieutenant Grace had in Hawaii for his intended long distance flight.



Side view of the Cruzair monoplane "Miss Southern California".

The builders of this plane, "Pop" Ayars, Lieutenant McNeeland and Mr. Hunold, formed the company a short time ago. All of these men worked on Colonel Lindbergh's "Spirit of St. Louis."

This Cruzair monoplane, which was named "Miss Southern California", was intended for the non-stop race from New York to Spokane as part of the National Air Derby but did not compete.

A. E. Peterson Joins N.A.T.

ALVIN E. PETERSON, who for the past year has been general superintendent of the air mail has wound up affairs of that organization, the operation of the air mail service by the Post Office Department having been concluded. He will be affiliated with the National Air Transport, Inc., of Chicago.

Since the assumption of the operation of all air mail lines by contract services Mr. Peterson has been engaged in disposing of the air mail service property valued at several million dollars, much of which was transferred to other governmental departments or to various municipalities. Mr. Peterson has served as superintendent of the air mail service for one year, having been promoted to that post from an assistant superintendency of the contract air mail service.

Side Slips

By ROBERT R. OSBORN

Mr. E. D. O. calls to our attention the following, taken from a newspaper story of a long distance flight by a Mexican Army flier,—"When the pilot was about half way to his destination, a wing on his plane, near where gasoline was stored, caught fire. Observing the danger, he dived down into a heavy rain and extinguished the blaze." Mr. E. D. O. includes with this clipping the inquiry if this accomplishment doesn't take the championship away from the California fliers, who repair landing gears and overhaul motors in flight. Our opinion is that the California fliers wouldn't have bothered to waste the time required to dive down into the rain-storm. The burning wing would simply have been cast loose, and replaced with the spare wing from the parts kit, with no time lost at all.

• • • •

Some time ago, Mr. Russel Crouse, columnist of The New York Evening Post, included this bit of poetry in his daily column,—

"A comely miss is Thea Rasche;
We hope her airplane doesn't crash."

Having, since, been formally presented to Miss Rasche, we'd say the poem might better have gone something like this—

A comely miss is Thea Rasche;
The crowds around her nearly squash yuh.

• • • •

"British Peer Offers London-Scotland Air Taxi Service Cheaply"
Headline

The secret of success on that line is in the last word.

• • • •

It is wonderful what can be done toward solving some of the worst problems confronting aviation when our great minds really get down to it. Before us is a copy of a "science" magazine in which the editor presents not only one but eleven methods whereby aircraft may find landing fields in fog. These schemes range all the way from a string of "radiumized balloons" which the pilot follows by means of an electroscope, to searchlights of infra-red rays which pierce the fog easily. The prize scheme of all, we think, is the one in which the editor proposes to mount a machine with a "fifty horsepower voice" at the field which continually calls out the name of the particular field, the pilot presumably wandering along until he hears his station called out. We'd like to know a few weeks ahead of time if one of these devices were installed at any flying fields near us. We might make a bit of a profit selling some real estate "short".

• • • •

An aeronautical engineer friend of ours tells us of a letter he recently received from a potential inventor. His correspondent admits that his invention will give a great impetus to the slow development of aviation, but before he can go ahead with it, he needs an answer to this question,—"What is the greatest weight that any airplane has ever lifted or failed to lift?" Our friend thinks that fifty tons is the correct answer to this question but suggested that it be submitted to the readers of AVIATION for checking before he answers the inquiry.

• • • •

The newspapers announce that a flight between the "world's two leading Polish cities—Warsaw and Chicago" will be attempted next year, with Captain Kowalczyk as pilot. We hope the flight will be a success, of course, but we decline any invitations to be toastmaster at the banquet of celebration afterward.

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Equipped with

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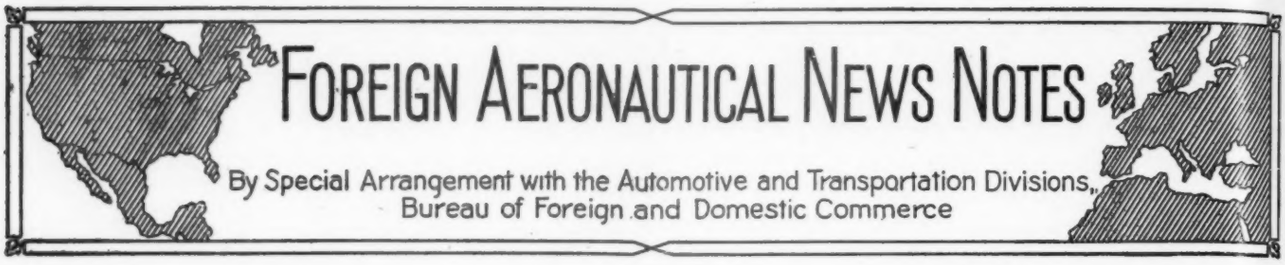

FOREIGN AERONAUTICAL NEWS NOTES
By Special Arrangement with the Automotive and Transportation Divisions,
Bureau of Foreign and Domestic Commerce

Australia Votes Additional Million

The Australian Federal Government has decided to allocate £200,000 for the development of civil aviation in addition to the annual expenditure of £115,000.

It is hoped by this move to encourage aviation sufficiently so that the distant parts of the Commonwealth can be brought to within four days travel from the eastern capitals of the country. One of the first routes under consideration will be that from Sydney to Brisbane, where an air service will cut the traveling time from 27 to 7 hr.

A service from Sydney to Melbourne is also contemplated and would effect a great saving in time over present train schedules.

It is hoped eventually also to inaugurate a service between Melbourne and Tasmania, but to insure safety and regularity over the route, a good portion of which would be over the open sea, requiring three engined planes, a much greater initial expense would be incurred. It is a question whether or not, with the traffic that could be expected at present, such a service would be profitable even with a government subsidy.

Another projected route is from Camooweal, in Western Queensland, to Darwin, the capital of the Northern Territory, where an air service would shorten the transmission of mail from Brisbane to Darwin to three days instead of eight and would permit of a weekly service as against the present monthly one.

Rotterdam Aviation School Established

The Nationale Luchtvaartschool (National Aviation School) at Waalhaven, opened Sept 10, under the auspices of the Rotterdam Aero Club.

The school will have the advantage of the guidance and counsel of several officials of the Aviation Division of the Department of Public Works and of the K.L.M. and the support of the municipality at Rotterdam, which will provide the training field without charge.

The Rotterdam Aero Club was able to raise enough money by private donations, (approximately $16,000) to finance the project, including the purchase of two Pander planes for training purposes.

The Department of Public Works of the National Government, before lending its aid, received assurance that courses of instruction would be open to non-members as well as to members of the club.

New Airlines for Czechoslovakia

The establishment of air service London-Prague is under consideration by the Ministerial Council. The Czechoslovak Aviation Society has submitted two plans for the lines: One in connection with an English company, which would go by way of Cologne, the other in connection with a Dutch company, which would go to Rotterdam and there connect with a line to London.

Regular air service between Prague and Marienbad was opened during the summer. Flying time is one hour. There are two flights in each direction every day, at 8:15 A.M. and 5:15 P.M. from Prague, and 9:15 A.M. and 6:15 P.M. from Marienbad.

Work has been started on a new light tower at Kbely, (Prague Airport). The flying field is to be enlarged and the wooden hangars replaced by concrete ones. The tower is 24 meters high, is hexagonal in shape, and serves also as a water reservoir. It is equipped with electric lamps of 8,000 c.p.

The Ministry of Public Works has purchased a light tower, which was exhibited at the Prague Aeronautical Exposition. This tower will be erected at the Brno Field. The Ministry is negotiating for the purchase of lights which shall be put up around the Prague Field.

The site of the proposed flying field in Carlsbad has been inspected by a committee of the Ministry of Public Works and found satisfactory. The necessary buildings and hangars will be put up this autumn and next spring and the field should be open for service next summer.

Regular Cherbourg-Southampton Service

Travelers to England via Cherbourg, France, can now contemplate their trip by a seaplane.

While at present trips across the Channel by flying boats will be carried out whenever required, the Imperial Airways is now considering ways and means of establishing a regular air line between the two ports. A new machine will shortly be placed in the service it is disclosed. This machine is a large "Medina" seaplane, constructed by S. E. Saunders, Ltd. of Cowes. It is fitted with two Bristol "Jupiter" air-cooled engines and carries ten passengers in addition to a pilot and mechanic.

Cherbourg Airport Campaign Continues

The Cherbourg Chamber of Commerce continues its campaign to make Cherbourg an important airport. The Chamber of Commerce has installed a floating landing station in the inner harbor for the use of commercial planes.

The chief obstacle in the way of the development of Cherbourg as an airport is the decree prohibiting planes from flying over Cherbourg or its port or from landing in the harbor. The chamber of commerce has every assurance, however, that this obstacle will be shortly removed. Meanwhile the chamber of commerce is studying the question of the acquisition of a landing field and the subsidizing of private aviation enterprises.

The routes contemplated in the development of Cherbourg as an airport are: Cherbourg-Nantes-La Rochelle-Bordeaux, with a connection from Cherbourg to Southampton, and from Bordeaux to Marseilles and thence to Morocco and Algiers.

Sevilla-Canary Islands Air Mail

The Director General of Communications has been authorized by royal decree to contract directly with the Compania Espanola de Trafico Aereo for the balance of the fiscal year, and for six months thereafter, to undertake, as an experiment and with provisional character, a regular air mail service between Devilla and Las Palmas and Santa Cruz de Teneriffe, C. I.

Estonia Purchases Czechoslovakian Planes

The Estonia Government recently placed an order for a series of modern airplanes with the Czechoslovak National Military Aeroplane factory located at Prague.

The terms and extent of this order have not been published as yet but it is believed that the Czechoslovakian government is executing the order to encourage Estonian air development.

AIRPORTS AND AIRWAYS

Minneapolis, Minn.

By H. A. Lindbergh

During the sixth annual Northwest Radio and Electric show held at the Minneapolis Municipal Auditorium, Phillips Carlin, director of WEAF of New York City, broadcasted his first impression of Minneapolis, from a plane in flight.

The message was picked up by WCCO, the Minneapolis and St. Paul station, and re-broadcasted, both as an unusual attraction for the visitors at the show as well as others and to demonstrate the value of the radio to the progress of aviation.

One of the Consolidated PT-1s (which are replacing the Jennies for military service) that have been allotted to the 109th Aero Squadron, Minnesota National Guard, was the plane that was used in this novel feature of the radio show.

This Squadron with Major R. S. Miller commanding, Lieut. G. M. Palmer as instructor and Arthur G. Hallaway as mechanic in charge, has done about 1200 hr. of flying so far this year.

There have been only two forced landings out of approximately 1500 flights made and these were due to minor troubles so this is a record of which the boys are proud and it should be of interest to the skeptics that doubt that there is any safety in flying.

The equipment of this unit is housed in three wooden hangars (65 x 120 ft.), which are located in one group on this 208 acre field.

There is a commercial oil and gasoline station at this airport, so high grade aviation gasoline and oil can be obtained at any time. The field is equipped with 12 large landing lights and as there are men in charge both day and night, it is possible to care for any emergency should there be any one desiring to land after sun down.

Lieutenant Eubanks, who came in from the National Air Races at Spokane stopped over at the field on his way to Dayton.

He had set down his plane near the St. Paul airport after dark as lights were on at that time, but he suffered no injuries nor damage to his plane.

"Speed" Holman, chief pilot of the Northwest Airways, which is operating the contract air mail route between Minneapolis and Chicago, was the Class A winner in the National Air Derby between New York and Spokane.

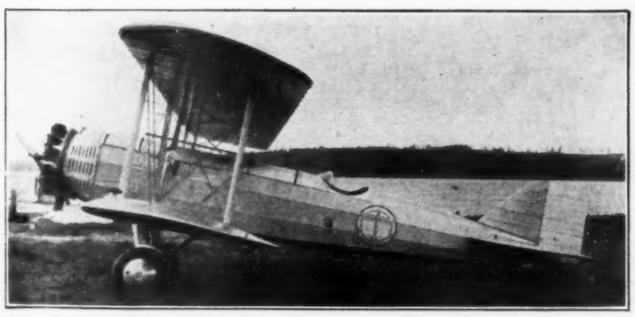
There are a number of commercial planes operating from this field so the upper air is generally in use by one or more of the types stationed there.

Hartford, Conn.

By B. A. Pollet

With the purchase by the Aviation Commission of one last parcel of land recently, arrangements have been completed for the further enlargement of Brainard Field. Work of grading and preparing the ground will begin at once as it is proposed to have the addition ready for use by next spring.

When finished, the field will be one of the largest municipal fields in the country, provided with cross runways of



Chicago-San Francisco Mail Planes Adopt Belden Wire as Standard

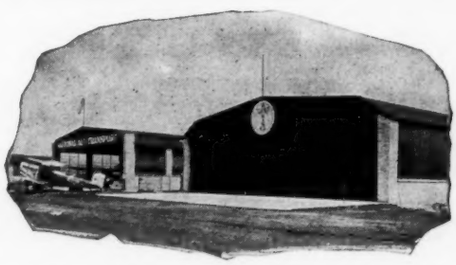
THE Boeing Air Transport, Inc., operating the Western Division of the Air Mail with twenty-five new Boeing Planes, represents an investment of over a half-million dollars.

Belden Wire and Cable is used exclusively on these planes because its dependable and lasting qualities have been proven by service. Write for data on Belden *complete* airplane wiring.

Belden Manufacturing Co. 2308-B S. Western Av. Chicago, Illinois

Specify Belden

Consult Belden Airplane Engineers regarding specially designed airplane harness — either shielded or unshielded — or other wiring problems.



Austin Designs and Builds Aviation Buildings

AUSTIN designs, constructs and equips efficient hangars, factory buildings and other structures at *low* cost.

Austin guarantees total cost, completion date and quality of materials and workmanship.

Austin will also deliver steel and other essential materials for erection by a local builder at a decided saving in time, worry and expense.

Representative companies from coast to coast have used Austin building service.

Ask for approximate costs and folder, "Austin Builds for Aviation".

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NOT SO BAD

L. C. MILLER in his stock model Eaglerock not only placed SECOND in the Class "B" N. Y.-Spokane Derby but walked away with FIRST honors in the Spokane - Portland Race. Says WHAT for Eaglerock?

J. A. McInaney, Sales Manager

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Georgia—Georgia Airways, Inc., Box 329, Atlanta, Ga.
Ky. and Tenn.—Datin Eaglerock Sales Co., 2031 Central, Memphis
N. C. & Va.—Charles Flying Service, Box 44, North Side, Richmond, Va.
Northern Iowa—Pioneer Flyers, Inc., Mason City, Iowa
Indiana—Ray Kuhl, 217 No. Main St., Mishawaka, Ind.
Michigan—Niles Airways, Niles, Michigan
N. Y., N. J. and Conn.—Atlantic Airways, New Rochelle, N. Y.
Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wisconsin
E. Mo. and S. Ill.—Bridgeton Aircraft Corp., 223 Pierce Bldg., St. Louis
W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12th St., K. C., Mo.
Okla. & Tex. Pan.—Southwestern Airplane Sales Corp., Britton, Okla.
N. M. & Cen. Texas—Browning Airplane Sales, Wichita Falls, Tex.
Southern Texas—Marion P. Hair, P.O. Box 420, San Antonio, Tex.
So. Cal. and Ariz.—Aero Corporation of California, Western Ave., at 99th St., Los Angeles
Northern California—Jas. L. Mayberry, 1210 B'way, Fresno
W. Washington and W. Oregon—Story Eaglerock Sales, 409 No. Yakima, Tacoma, Wash.
Wyo., Mont. & W. Neb.—Wyoming Airways, Inc., Casper, Wyoming
S. Dak. & N. Dak.—Rapid Air Lines Inc., Rapid City, S. D.
W. Kan. and E. Neb.—C. E. Steele, Dodge City, Kansas
La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
W. Va. and E. Ohio—Lyle H. Scott, 328 2nd St., Marietta, Ohio
Utah—Rocky Mountain Airways, Salt Lake City
Mississippi—Tri-States Airways, Bry Block, Memphis, Tenn.
Maryland and E. Pennsylvania—E. W. Robertson, Alexandria, Va.
So. Carolina—Errett Williams Spartanburg, S. C.
Me., N. H., Vt., R. I. and Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield Mass
W. Penn. and N. E. Ohio—Lt. Jack P. Morris, Pittsburg Airport, Pittsburg, Pa.
Northeastern Indiana and Western Ohio—Indiana-Ohio Aero Corp., 203 Carroll Bldg., Ft. Wayne, Ind.
Nevada—Nevada Air Service, Reno, Nev.

ALEXANDER AIRCRAFT CO.

ASSOCIATED WITH ALEXANDER INDUSTRIES
Room 401, Alexander Industries Bldg., Denver, Colo.

2800 ft. in length. When it is further considered that it is completely equipped with all night flying facilities, including flood lights, obstruction lights and an excellent system of border lighting, that it has available a most complete machine shop and assembly hangar, and that it is probably the most accesssible of fields in point of distance from center of town, it will be obvious why it never lacks for traffic.

It may be of some interest to other communities contemplating similar action to learn that immediately upon publication of the fact that such expansion had taken place, five concerns, three of national repute, lost no time completing arrangements whereby they would be assured of some ground where a hangar might be built. To date the following have made definite statements as to their intention in this matter: Pratt & Whitney Aircraft, manufacturers of the Wasp and Hornet engines; the Royal Typewriter Co., which is at present operating a Ford Stout tri-engine, the Standard Oil Co., the New England Aircraft, agents for the Waco, and the Interstate Airways.

The commission headed by Hiram Percy Maxim, of silencer fame, has firmly resolved to leave no stone unturned, in its efforts to encourage the active use of the port facilities, and has shown a willingness to go more than half way, by drawing up a contract with the prospective users, which embodies terms which are exceedingly favorable to the second party.

It is estimated that the city will have spent approximately $277,000 in connection with the field, including improvements, upkeep, and the cost of the municipal hangar, and it is proposed to charge a yearly rental of $300.00 to the tenants.

Much interest is manifested in the expected arrival of Capt. Earl W. Fleet with Hartford's entry in the late Spokane race, "Hartford, Conn." Capt. Fleet entered in the Class B race, but was forced down with a broken connecting rod some distance from La Crosse, Wis. Assisted by the mechanic the engine has now been repaired and their arrival is expected daily.

Aviation Commissioner Clarence Knox will from now on be found at the administration building of the Connecticut National Guard at Brainard Field, the installation of the office having been completed.

Santa Monica, Cal.

By Geo. L. Geiger

Art Goebel, Santa Monica flier who won the Dole Hawaiian flight prize, is making an air tour of Oklahoma, Kansas, Texas, Colorado, Wyoming and Utah. He is traveling, accompanied by his mechanic, Carl Spangenberger, in his Hawaiian hop plane, "Woolaroc". Before leaving Clover Field, Goebel told newspaper men he would attempt an outside loop at some future date and if this is successful, will then devote himself to study of aviation promotion.

The Standard Oil Company of California has published a new edition of a landing field directory for distribution among pilots. Attention of air passenger, mail and express services is called to the fact that the Pacific coast now has 173 recognized landing fields, an increase of thirty-nine since the previous issue of the directory in June.

Responding to a call for serum for a child threatened with death from acute infantile paralysis in a Visalia, Calif., hospital, pilot J. V. Sandblum arose from Rogers Airport within a half hour and three hours later the serum was being administered.

Widespread interest was created by the arrival at the American Aircraft Airport recently of Theodore T. Hull, wife and little son, by airplane from New York City. Mr. Hull, president of the American Aircraft Company, with Mrs. Hull and boy, left Roosevelt Field, Sept. 15 and journeying to the Pacific Coast, stopped at Buffalo, Chicago, Wichita, El Paso and Tucson en route. The long westward flight was made without incident, the "Fairchild" being flown to the Los Angeles area for passenger and freight use.

An immense beacon, such as in use in eastern airports, is proposed for the Ocean Park beach by the Business Men's Association of the Ocean Park section of Santa Monica. A 125-foot steel tower and huge light; whose rays would be visible for two-score miles, are outstanding features of the beacon.

Prior to his departure for New York City to join the staff

of the Guggenheim Foundation, Alan Sullivan, production, planning and cost manager for the Donald Douglas Company for the past eighteen months, was honored at a press dinner in the Santa Monica Athletic Club, attended by representatives of Los Angeles and local dailies. To them Sullivan, a prime favorite among newspaper men of the Pacific Coast as he was among Atlantic coast writers while he was Washington representative of Donald Douglas and air-magazine editor, outlined some of the aims and endeavors of the Guggenheim Foundation as they would apply to the Los Angeles area. In his unfailing courtesy to scribes seeking authentic and authoritative information on air matters, Sullivan won a high place in the esteem of newspaper men whose best wishes in his new position go with him.

That the building of model airplanes by youngsters is more than just play, is the opinion of Lieut. Walter K. Burgess, commandant of Clover Field. The lieutenant, who is, by the way, an honorary life member of the Capitol Model Airplane Club of Washington, D. C., is contemplating the formation of a similar young folks society in Santa Monica. "These clubs are not just play" he explains, "but are of great value in the future development of aviation."

The city commissioners of Santa Monica, through whom the United States government leases Clover Field, a municipal field, a clause has been written into hangar leases stipulating that all planes seeking berths must first be inspected and approved by the Federal authorities.

Mt. Home, Idaho

This town has an airport located on the Collins' homestead of 120 acres ½ mi. south and a little east of the business district. It has two runways. The N.W. and S.E. one is 1200 ft. long while the other, an E.W. one is 2500 ft. The field has been scraped and leveled and there are no obstructions.

Oklahoma City, Okla.

By Ernest W. Fair

F. Lane, Elk City, R. P. McDonald, Fred Prickett, Shorty Wills, Fred Jones, were among some of the local men who made the trip by air to the Dempsey-Tunney fight.

Wendall Bailey is to be the Oklahoma City representative in the Memphis national model airplane contest. News has just been received that he has been declared eligible for the contest.

J. W. Swan, secretary-treasurer of the Braniff Investment Co. here tells how the air mail saved time and money for him. He had some valuable plans to submit to a business group in New York City and placed the air mail package here at nine o'clock in the morning. At noon the next day a telegram came from the New York group approving the plans.

Oklahoma City was host to two world famous airmen recently. Col. Charles A. Lindbergh and Art Goebel were the two men.

Lindbergh arrived in good, but not fine, weather. A crowd of around 125,000 people welcomed him at the municipal airport when he came in. Many more went out to the field later to see his plane. He was taken from the field on an auto tour of the city a few moments after he landed, riding in a car with Mayor Dean of Oklahoma City and Governor Johnson of Oklahoma.

He attended ceremonies at the Oklahoma City University and dedicated a new hall. In the evening a thousand plate banquet was given in his honor at the Shrine Auditorium at which he gave a short address.

His parade covered over a hundred blocks of the city with crowds watching him everywhere.

At the banquet that evening Ed Overholser, president of the chamber of commerce, presided and gave a brief review of Oklahoma City's areonautical progress. Mayor Walter Dean introduced Colonel Lindbergh. After his address he presented Eagle Boy Scout medals to three Oklahoma City boys, Jack Stone, Wendall Bailey and Eugene Beeman.

Art Goebel, the other pilot honored, arrived in less lucky weather. He landed amid a downpour of rain at the municipal field and was loud in thanking Oklahoma City for her all-weather field here.

The beacon lights helped in guiding him to the field, he

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said. This was his first visit to Oklahoma City so the use of the new equipment at the field has been of great help so soon after its installation.

Goebel flew over the fairgrounds about 11:30 and then proceeded to the field and landed. In the afternoon he gave an address at the state fair grounds.

From Oklahoma City the Goebel party flew to Ponca City over the air mail line.

George Miller, manager of the 101 ranch and Frank Phillips, backer of Goebel, were passengers in the plane on its arrival from Tulsa.

Billy Parker piloted the Phillips Waco plane from Tulsa with C. C. Spangenberger, mechanic of the Woolaroc, as passenger.

The organization of the Oklahoma City Flying Club was held here recently. G. H. Severin is the chief promotor.

The club will meet for technical study in night classes taught by local pilots and will work into actual flying as the instruction progresses. It has about twenty members now.

Mason City, Iowa

Mason City, although not among the larger cities of the country, need take no back seat when its field is being compared with many larger centers.

The American Legion, with Eugene Kew as Commander, has leased an eighty acre tract about two miles from town as an airport, with the chamber of commerce coming in on the arrangements at the end of the second year.

Large planes can be accommodated as this field has been used by the Stanolind several times, the Royal air truck has been a visitor as well as a three Whirlwind engined Fokker, brought here during the dedication of the field.

An Eaglerock agency for the northern half of Iowa, operated by Archie Peterson, Geo. C. Barrett and Stanley MacPeak, under the name of Pioneer Flyers Inc. has been enjoying a good business at the field, but as their demonstrator has been sold and delivery of another is not expected for several weeks, they are watchfully waiting. They are otherwise occupying the northern one half of the steel hangar and the Mason City Airways, who are the dealers for the American Eagle, are using the other half. Geo. Lowers of Des Moines is the pilot of the American Eagle, while Sam Giesel is the manager of the field.

Archie Peterson has been flying since 1921 and Geo. C. Barrett since the war and as they have been active along aviation lines for some time in Mason City, the name under which they operate, Pioneer Flyers, is an appropriate trade-name.

Visiting pilots will notice that a one hundred foot circle serves as a marker and when they set down their plane, gasoline and oil service is available if desired.

The north and south runway, which is about one half mile long, is about twice the length of that in an east-west direction.

The present plans call for the lighting of this stop-over on the air route by next spring and other improvements will be carried out as soon as possible.

Catalina Island, Calif.

By Charles F. McReynolds

The Pacific Marine Airways, operated by E. A. Bacon, of Los Angeles, has this year completed its sixth successful season. During the time of operation more than ten thousand passengers have been flown, a distance of three hundred thousand miles has been covered over water, and not one mishap of any sort has occurred. This last season set a record for passenger carrying with over two thousand customers carried and three months of the year left.

The equipment used on the 23 miles over water flight from Wilmington, Cal., to Avalon, Catalina Island, consists of two Curtiss HS 2L seaplanes, which carry five passengers and

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pilot. Two trips daily are made during the summer and flights are continued through the winter by appointment. There are two pilots employed throughout the year, Franklin Young, chief pilot, and Harold Kirby.

The new mainland terminal has been located alongside the Los Angeles Yacht Club and two blocks east of the Catalina Steamship terminal in the inner harbor, the planes taking off and landing along the narrow channel leading out to the outer harbor.

The company now plans to add two of the new Sikorsky S-36 flying boats to its service and by using the amphibian equipment the flight may be made directly from a downtown landing field in Los Angeles to the harbor at Avalon, Catalina Island.

The joy hop concession for Catalina Island is owned by Art Burns, Naval Reserve pilot who spends his winters in San Diego on active duty flying the Curtiss Hawks and Boeing planes. In his spare time Mr. Burns is a practising attorney in Los Angeles.

The Art Burns Flying Service has operated for six seasons in carrying passengers for short hops at Avalon or to points along the coast of the Island, the equipment being a Curtiss flying boat with Hisso engine.

Mr. Burns has carried between four and five thousand passengers during the 1927 summer season, making an average of almost fifty hops a day, and has never had an accident of any sort with his "boat".

Los Angeles, Calif.

The fact that Los Angeles was the fiftieth city visited by Col. Charles A. Lindbergh on his tour of the country, did not dim the enthusiasm of his reception by the people of Los Angeles.

Following Colonel Lindbergh's own wishes, original plans to have him land at Clover Field were altered in order that he might honor Western Air Express, air mail contractors for the Los Angeles-Salt Lake City route, and land at the home port of that organization, Vail Field.

Conservative estimates of the crowd present at the field were 250,000. In order to allow him to keep his appointments there was no parade from the field and he was whisked by fast auto with motorcycle escort to First St. and Broadway from where he paraded past the greatest crowd ever assembled in Los Angeles on his way to the Coliseum. Children only were permitted in the Coliseum and sixty thousand of them were present to give "Lindy" a great ovation.

The newspaper estimates of the total crowd were well over a million, and the ovation given was as great as that first reception at Washington, D. C.

Lindbergh appeared to be a very tired young man when he arrived here five minutes ahead of schedule, after having landed on a dry lake of the Mojave desert and rested for an hour in order to hold to his scheduled time of arrival, but he carried through his program of speeches and appearances without a falter. His visit has certainly brought aviation interest to a head and we are looking forward to immediate action on a municipal airport.

The Lindbergh beacon was installed on the tip of the city hall tower the evening before his arrival.

After departing for San Diego on Wednesday, Lindbergh made an unheralded return trip when he piloted the Ford plane operated by Jack Maddux Air Lines, from that city to the Inglewood Airport, southwest of town.

With Colonel Lindbergh on his flight were Will Rogers and Mrs. Rogers, Mr. and Mrs. Jack Maddux, Harry H. Culver, Judge Benjamin F. Bledsoe, C. C. Tanner, George L. Eastman, vice president of the Los Angeles Chamber of Commerce, Howard Worth, president of the San Diego Chamber of Commerce, Mayor Harry Clark of San Diego and B. F. Mahoney, builder of the Spirit of St. Louis.

Colonel Lindbergh arrived here at 10:25 A.M. and took off on the return flight to San Diego at 11:05 A.M. On the flight back he carried Mr. and Mrs. Maddux, Miss Helen Maddux and Jack Maddux, Jr., J. L. Van Norman, Dr. Ford A. Carpenter, Charles E. Lindblade, Mayor Clark, Howard Worth,

The Aeroplane

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Editor

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B. F. Mahoney and Wayne Alles. This is said to be the first time that a plane of this size has flown with a full complement of passengers, only one pilot and no mechanic. Jack Wiles, mechanic, and Lawrence Fritz, pilot, brought the plane back to Los Angeles, and Mr. Maddux has announced that daily flights between the two cities will be made hereafter and with the arrival of the second Ford plane which is expected soon they will both be placed in service between Los Angeles and San Diego.

"Doc" Whitmey and J. B. Alexander will open their new American field on Mesa Drive soon. The field will be the most modern in this area as it is having a complete sprinkler system installed and will be an all grass layout. Three hangars are already up, one, facing the highway, to be used as a show room, and three hangars are under construction.

This field is to be operated by the American Aircraft Corp., the president of which is Theodore T. Hull, vice president of the Pan American Bank of Los Angeles. It is located between the Pacific Air Transport and Rogers Airport and gives a continuous flying field frontage of almost a mile when all three fields are considered.

The American Aircraft Corporation is California distributor for Waco and the new Fairchild monoplane, the first Fairchild having just been flown in from New York by Mr. Hull accompanied by Mrs. Hull.

Major C. C. Moseley, vice president and flying superintendent of Western Air Express has recently had his squadron in camp and during the two weeks training period made several interesting flights. The squadron is equipped with the new PT-1 training planes and a Douglas observation and Douglas transport.

Eight planes flew four hundred miles to Sacramento to greet the governor and made the entire eight hundred miles without incident. Twenty seven men made this trip. Later the squadron flew to Big Bear Lake and landed there for an overnight camp at an altitude of seven thousand feet.

The squadron also flew as escort to Brig. Gen. Frank P. Lahm on its recent visit to Clover Field and Griffith Park airport.

Representatives of the chambers of commerce of Colton, Riverside, San Bernardino, Ontario, Anaheim, Pomona and Santa Ana were recently flown from Los Angeles to the State Fair at Sacramento by Larry Fritz in the big Ford plane operated by Jack Maddux.

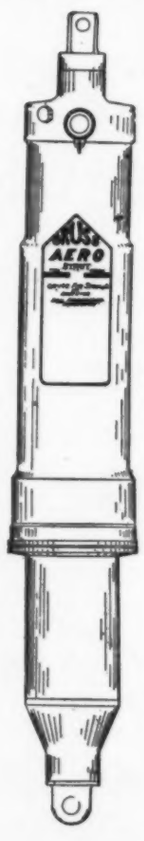
Capt. Charles H. Babb returned yesterday from Spokane, following the award of the 1928 Air Races to this city, and set about at once in his official position as executive secretary for the Southern California Chapter of the National Aeronautics Association, to provide ways and means to make next year's races the biggest and best yet. His chief line of attack is to be an attempt to obtain a municipal airport at once and many local airmen and business men are working hard to bring about an understanding among the various persons interested that will result in our long looked for, city owned, airport.

Boyd M. Shelton, secretary, and D. E. McDaniels, president, of the Southern California Chapter of the N. A. A., flew to Spokane in a plane of their own construction styled the "Packard Pup". It is a thirty foot wingspread biplane with a 180 Hisso engine said to give a maximum speed of 12[illegible] m.p.h.

The first birthday of the Pacific Air Transport was celebrated at the Mesa Drive field by the dispatch of what is said to have been the largest air mail shipment ever carried out of Los Angeles. Mayor Cryer presided at ceremonies on the field.

W. F. Crawford has incorporated the Crawford Motor and Airplane Manufactory, Inc., and will soon open a new field on the I. W. Hellman ranch. Mr. Crawford has been in the business locally for several years.

The Brown Mercury monoplane was given its initial flight recently with Larry Brown at the controls. Later it was flown by Miss Mildred Minar, of the Falcon Flyers. The plane has three fifty horse power engines which give it a high speed of



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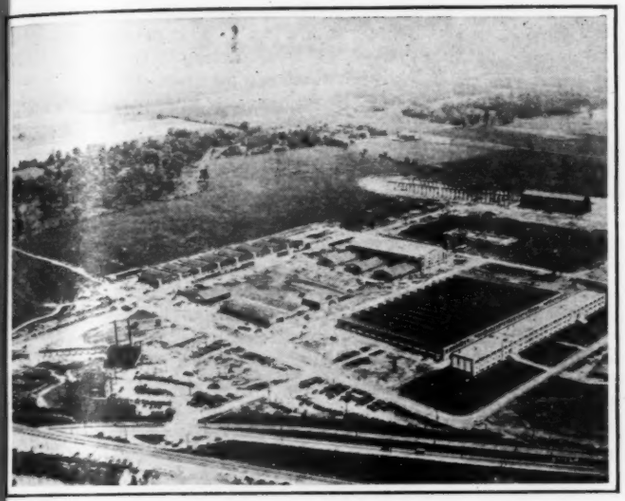
115 m.p.h. The Brown Mercury Aircraft Corp. plans to go into production at once on this job which is a four place high wing monoplane.

Dayton, Ohio

Wright Field, near this city, was dedicated Oct. 12, with Secretary of War Dwight F. Davis and Assistant Secretary of War for Aviation F. Trubee Davison, as the principal speakers.

The Wright Field, comprising 5,000 acres, is the largest aviation plant in the world, both in size and in the far reaching research, engineering and experimental work which will be conducted there. The field is the gift of the citizens of Dayton. In November 1922, a campaign headed by Frederick B. Patterson, president of The National Cash Register Company, resulted in the raising of $400,000 for the purchase of farms. These later were presented to the government and accepted by President Coolidge in a letter of thanks.



Wright Field, Dayton, Ohio.

For two years the site of the field has been the scene of much activity. Much progress already has been made. The new administration and other buildings have been erected and progress is now being shown in other lines of development.

Brig. Gen. W. E. Gillmore, in charge of the Materiel Division of the Air Service, has his headquarters at the Wright Field.

The site is near the first flying field in the world, the old Wright Brothers tract where the two former bicycle merchants in Dayton tried out many of their earlier experiments with a heavier-than-air flying machine.

Sioux City, Iowa

It is the belief that the first tour of inspection of live stock ever made by a bank official, was that recently made by H. B. Scott, vice-president of the Live Stock National Bank of Sioux City, Iowa.

Mr. Scott left on a tour from Rickenbacker Field with Jay and John Gehan of Wesington Springs, South Dakota, and reached Aberdeen, South Dakota, in two hours.

They traveled as far west as Miles City, Mont., and H. B. Scott stopped at various places to inspect cattle, relative to negotiating loans through his bank.

Norman, Okla.

B. S. Cheebie Graham, head of the Oklahoma Air Transport Co. here, is recovering from an operation for appendicitis.

Jimmy Hazlip, flier with the Oklahoma Air Transport Co. is attending the University of Oklahoma as a student.

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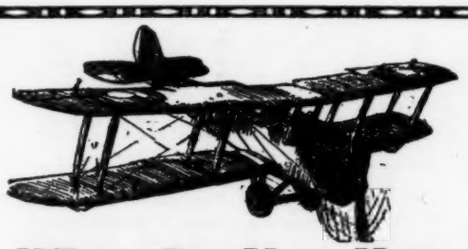

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Duluth, Minn.

As the tourist season is over and passenger carrying is less brisk than during the warm season, the Arrowhead Airways is nevertheless busy as the numerous small fairs in this part of the state are using its services.

There are other demands for at least one of this company's planes away from the field, so the Waco-9 has been equipped with dual controls for student instruction and they expect to purchase a Waco-10 for passenger carrying.

The Waco-9 will also be used for solo work for those pilots in training, who desire to build up the hours required before a license will be granted.

Joe Goodall made a successful parachute drop from one of the Arrowhead Airways' planes piloted by Eddie Middagh during the Lake County Fair at Two Harbors.

As he is the only one that 'steps off' in this part of the state, he is kept busy fulfilling the numerous demands for his services at the small surrounding towns as well as at activities in Duluth and Superior.

The hangar is being completed and other improvements that have been delayed because of an unusually busy summer are to be finished before the cold weather is here to stay again for a number of months.

Boise, Idaho

By Robert Blackstone

The Boise chapter of the N.A.A. has elected the following officers and directors for the year—Cyril C. Thompson, president; Oscar W. Worthwine, first vice-president; R. G. Spaulding, second vice-president; Harry O. McDougal, secretary and treasurer; Joe D. Wood, Charles E. Winstead, and George Reynolds, directors.

President Thompson was instructed to write a letter of appreciation to the city council of Boise, thanking them in the name of the local N.A.A. chapter, for their activities in developing the Boise Airport.

Immediately after the election, a meeting of the state organization was called to choose national convention delegates for Idaho. H. C. Baldridge, Governor of Idaho, was named state delegate and Joe D. Wood, commissioner of public works, as alternate.

The state-wide meeting placed itself on record as in favor of the mapping, marking and lighting of all airways as a major project for the national association.

Association delegates to the national convention of the N.A.A. at St. Joseph, Mo., were Harry O. McDougal, assistant attorney general of Idaho, and his alternate was George Reynolds. Both men were former Army pilots and after the St. Joseph convention they went to Spokane to see the races.

Capt. Harry O. McDougal, ex-war pilot, flew one of the planes of the Southern Idaho Airways, Inc., to his old home, Pocatello, Idaho. "Pocatello is a windy place," declares McDougal. "The flying field at Pocatello is east of the concrete highway, and 2 mi. north of the business district. Ditch on north end. It has a N.E. runway of 1500 ft. The chamber of commerce is planning to level the field and make other improvements."

The Jenny, formerly owned by the Walters Flying School, is now housed on the student field of the Southern Idaho Airways, Inc. This field is 6 mi. south of Boise on a line with the domes of the capitol and R.R. station. "Any size plane can set down on this field and all are welcome to use it." says W. B. Hawkins, service manager of the S.I.A. Mr. Hawkins, who was with the British Air Force during the World War, is now piloting the Jenny, which was formerly piloted by Art Walters, who is reported to have bought a Waco-Nine and started a flying school at Wadena, Iowa, his former home.

A Portland, Ore., photographer, Otto Jones, piloted by Capt. Harry O. McDougal, has made movies of Boise, Boise mountains and valley, Barber Lumber Co., which is 6 mi. east and also Arrowrock dam, which is 20 mi. up the Boise river. These movies are to be supplied to Boise theatres as news-scenic reels gratis by the Southern Idaho Airways, Inc.

The new Stearman, lately put on the Boise-Salt Lake air-

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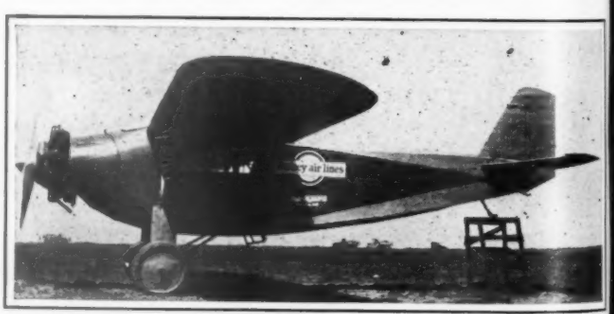

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Varney Air Lines

Boise, Idaho

way by the Varney Airmail Service, recently cut down the flying schedule 60 min. from Salt Lake to Boise. This air route is 320 mi. long and the regular time to fly it has been 3:40 min. Being late in leaving Salt Lake recently the pilot gave the Stearman the gun and made it through to Boise in 2:40 min.

Frank Rastler, the Varney mechanic at the Boise airport hangar, is visiting his folks at Price, Utah. He journeyed to Salt Lake City by mail plane.

"Joe" W. Taff, a pilot for Varney, stationed at Pasco, Wash., the west end of the Varney air mail route, is vacationing at Palo Alto, Calif., his former home. Pilot Taff is a graduate of the Varney Flying School of San Francisco.

Paul A. Andert, mail plane pilot for Varney, is back on the job after a visit by car with his family to San Diego, Calif., where he lived before accepting a position with the Varney Airmail Service.

Philadelphia, Pa.

By Edwin L. Bowker

At a meeting here Oct. 4 William P. MacCracken, assistant secretary of commerce for aeronautics, outlined the method of financing municipal airports. He said that after months of consideration the city officials of Buffalo planned to finance an airport by issuing bonds. Mr. MacCracken said this was one of the best means to finance such an undertaking.

The secretary declared that various municipal flying fields in the country, which have been sponsored by municipalities, are meeting with great success. He asserted that in the future a city would be known by its airport facilities.

Applications have been filed with the Pennsylvania State Public Service Commission at Harrisburg by the Reading Airways and the Gettysburg Flying Service, Inc., for the right to begin transporting by airplane on call and demand passengers, freight and personal property throughout the State of Pennsylvania.

The U. S. Navy dirigible Los Angeles was a big attraction at the Doylestown, Pa., Fair Oct. 5. The airship circled over the Fair grounds fifteen minutes in a cloudless sky. Thousands of patrons enjoyed the spectacle.

The Philadelphia Airport is installing a 500,000 c.p. lamp, one of the most powerful in the world, in preparation for the visit Oct. 22 of Col. Charles A. Lindbergh. The installation was ordered in case Colonel Lindbergh should arrive at night or should wish to take off at night during his stay here. The powerful airport beacon, however, is a permanent feature of the municipal flying field.

A force of workmen has started grading and resurfacing the flying field in preparation for Colonel Lindbergh's arrival in his Spirit of St. Louis. This is a part of his nation-wide air tour.

Red lights have been erected on top of each of the Philadelphia Electric Company's high tension poles in the airport's vicinity. Floodlights are installed on top of the two big hangars. This is all in addition to the 500,000 c.p. beacon.

Pilots Donald Darby and Jack Barton of the Philadelphia airport went to Ohio recently to procure a new Waco plane from the factory at Troy, Ohio. The airmen flew back here in the new machine which will be used for local passenger flight service, especially on Sundays.

Every Sunday this fall there is a crowd of 5,000 or more at the airport. Many short passenger flights are made by the Ludington service pilots. Not only are the throngs interested in seeing the planes maneuver but scores enjoy the air rides over the field and sometimes farther away.

Two skywriting pilots, Louis Meir and Charles Crollyer, are busy over Philadelphia on an advertising stunt. They entertain thousands high above the city.

The city officials here have completed plans for the reception of Col. Charles A. Lindbergh, who will fly to Philadelphia from Baltimore on Oct. 22. He will fly to the airport at the extreme southwestern end of the city, arriving at 2 P.M., and will be met by Mayor Kendrick, members of the chamber of commerce and other distinguished citizens.

The flier will then dedicate the municipal flying field and

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proceed to the municipal stadium where he will address several thousand school children. At seven o'clock in the evening, the city of Philadelphia will formally entertain Colonel Lindbergh at a public reception and banquet at the Bellevue-Stratford Hotel.

UNITED STATES AIR FORCES

Mosquito Eradication by Plane

The Navy's new all-metal Ford transport plane, equipped with dusting apparatus and carrying 500 lb. of paris green combined with powdered soapstone, staged a successful demonstration of swamp dusting by airplane recently at Bamburg, S. C. The mixture used will penetrate the most dense foliage and kill all mosquito larvae lodged in the water beneath.

The excellent results obtained by spraying marshy areas at the Marine Corps Base, Quantico, Va., during the past year gave state health officials and representatives of large power companies confidence in this method of eradication and the demonstration at Bamburg was entirely successful from the standpoint of the Public Health Service.

An impounded lake, heavily wooded, and which has a thick growth of underbrush and very few areas of open water, located ten miles south of the city of Bamburg, S. C., was selected as an ideal site for a demonstration of dusting. The malarial mosquito is known as the anopholes and feeds at the surface of the water. As a test of the efficiency of the process, Public Health Surgeon Le Prince examined a dipper of water from the swamp before the dusting and found it contained 25 larvae. Four hours later a dipper from the same part of the swamp was examined and the water contained no larvae. Twenty-four hours later the water still contained no larvae.

Army Officer Delegate to Rome Conference

In answer to an inquiry from the Secretary of State on the subject, the Secretary of War has requested the designation of Maj. George E. Lovell, jr., Air Corps, as delegate on the part of the United States to the International Congress of Aerial Navigation to be held in Rome, Italy, Oct. 20. Major Lovell has recently reported for duty in the American Embassy, Rome, as Assistant Military Attache.

Army Air Orders

Sec. Lieut. Thomas D. Drake, Inf., is detailed in the Air Corps. He is relieved from assignment to the 10th Inf., and from station and duty at Fort Thomas, Ky., and will proceed to Brooks Field.

Maj. John F. Goodman, Inf., is detailed in the Air Corps. He is relieved from detail as instructor, Mass. Nat. Guard, and from further duty at Worcester, Mass., and will proceed to Brooks Field for duty and training.

Navy Air Orders

Lieut. (jg) Robert E. Blick det. VT Squad. 1S, Aircf. Squad., Sctg. Fleet, to VF Squad 5S, Aircf. Squad., Sctg. Fleet.

Lieut. (jg) Alan R. Nash det. VO Squad. 5S, Aircf. Squad., Sctg. Fleet, to VF Squad. 5S, Aircf. Squad., Sctg. Fleet.

Lieut. (jg) George A. T. Washburn det. VO Squad. 3S (USS Trenton) Aircf. Squad., Sctg. Fleet, to VF Squad. 3S, Aircf. Squad., Sctg. Fleet.

Ens. James H. Carrington det. Nav. Air Sta., Pensacola, to c.f.o., USS Saratoga.

Ens. Richard Davis, Jr., det. Nav. Air Sta., Pensacola, to c.f.o., USS Lexington.

Ens. Carleton C. Hoffner det. Nav. Air Sta., Pensacola, to USS Humphreys.

Ens. John G. Moore det. Nav. Air Sta., Pensacola, to c.f.o. USS Lexington.

Ens. Cornelius M. Sullivan det. Nav. Air Sta., Pensacola, to c.f.s., USS Lexington.

Ens. James M. Smith det. Nav. Air Sta., Pensacola, to USS Maury.

Lieut. Joseph E. Ford det. VS Squad. 1S, Aircft. Squad., Sctg. Fleet, to VT Squad. 3S, Aircf. Squad., Sctg. Fleet.

Lieut. Comdr. Harry R. Bogusch det. Nav. Air Sta., San Diego, to USS Langley.

Lieut. George R. Henderson det. Nav. Air Sta., Anacostia, to VF Squad. 3S, Aircf. Squad., Sctg. Fleet.

Lieut. Gordon Rowe det. Aircf. Squad., Battle Fleet, to aide on staff, Comdr., Aircf. Squad., Battle Fleet.

Lieut. Clarence H. Schildhauer det. from all duty with Aircf. Squad, Sctg. Fleet, to duty with VX Squad D5, Hampton Roads.

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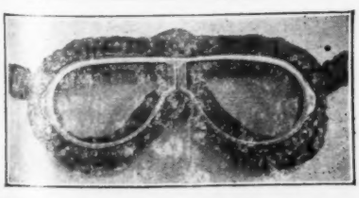

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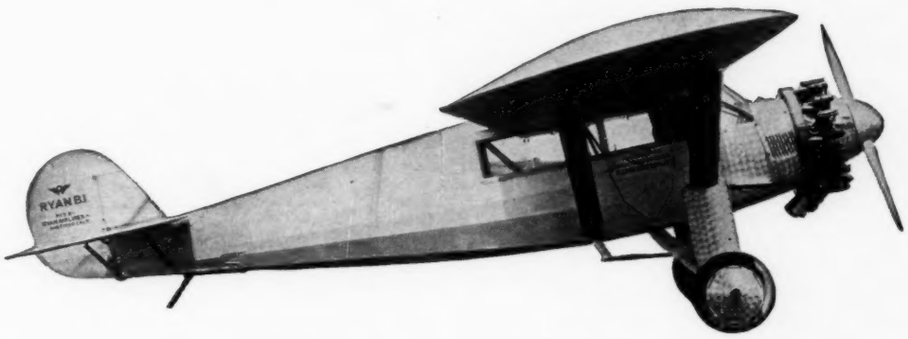

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